

**"You Are Number One in My Book!"**  
— George Dacey



## Bond Drive Ends with 96.7 Percent Participating

Final tally of the 1985 US Savings Bond campaign at Sandia shows 96.7 percent of employees are now buying Bonds. This is an impressive 7.4 percentage point increase in participation and exceeds the Labs' goal of 95 percent. More impressive is a whopping 16 percent increase in Savings Bond allotments — a total annual investment of \$2,300,000 or (stated another way) an

*(Continued on Page Three)*

**For Strategic Defense Initiative Office**

**G.C. Dacey**  
President

**Sandia National Laboratories**  
Albuquerque, New Mexico 87185

Dear Fellow Sandians:

All Sandians can be proud of our outstanding record in supporting the U.S. Savings Bond Program. I am pleased to note that this year's campaign was particularly successful and brought our participation in the program up to new highs.

Before the campaign, we set our Laboratories' goal for participation at 95% — a figure that has not been met since we increased the minimum deduction several years ago. I also issued the challenge: "Make Sandia Number One" on the Treasury Department's Honor Roll.

Our final figure for participation in the Bond Program — 96.7% — exceeds our goal and puts us a full percentage point above last year's leader in our category. We increased our total allotments by 16%, bringing our monthly average to about \$22.70 per employee. We will have to wait until the Treasury makes its report later in the year to see if we made Number One.

I wish to thank the members of the 1985 Savings Bond Campaign and all Sandians for making this one of the most successful bond drives ever. You are Number One in my book!



# LAB NEWS

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SANDIA NATIONAL LABORATORIES

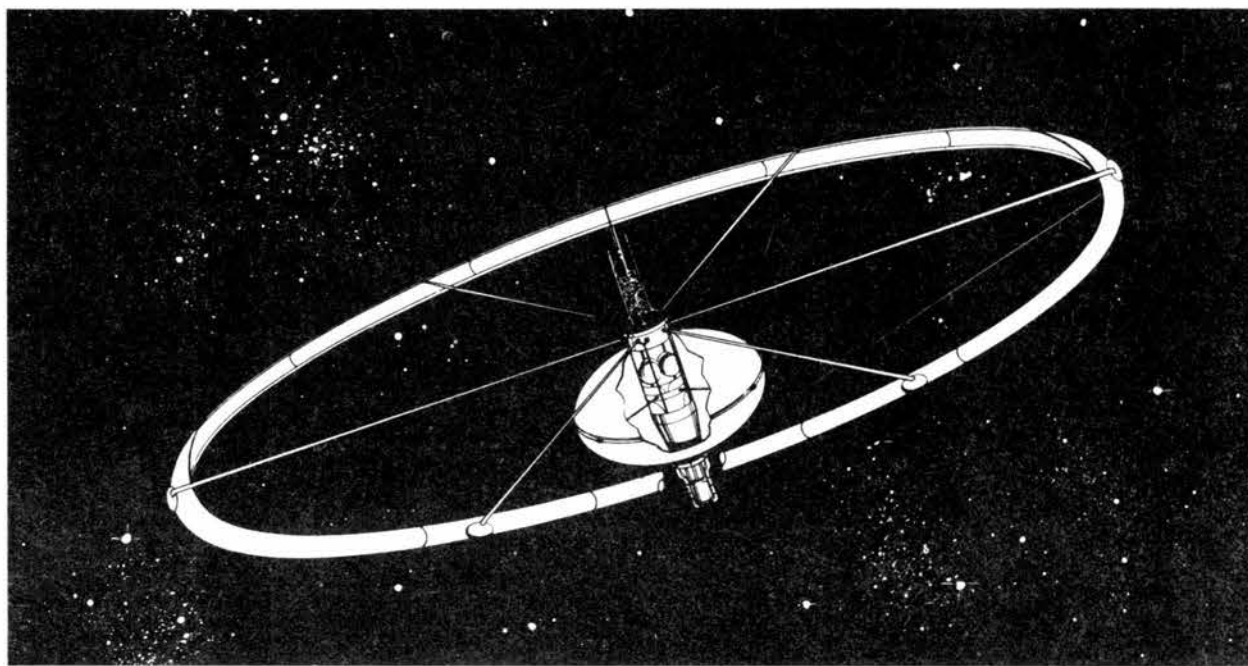
MAY 24, 1985

## Sandia Assigned Role in Space Power Program

A key part of the Space Power Program under the Strategic Defense Initiative Office will be performed by Advanced Power Systems Division 6433. Lou Cropp's group, along with NASA's Lewis Research Center (LeRc), will evaluate concepts and technology for the multi-megawatt power systems that will support the defensive weapons now being considered by the Strategic Defense Initiative Office. Initial funding for the Sandia effort for FY85 is \$500,000.

"It's another piece of the overall SDI program," Lou says. "Sandia is uniquely suited for this job. We were technical directors for the early nuclear systems used in space — the SNAP (Systems for Nuclear Auxiliary Power) devices that powered scientific instrumentation placed on the moon by astronauts and other SNAP units that powered satellites.

"More importantly," Lou continues, "the Space Power Program will need the kinds of advanced technologies that Sandia has pioneered for nuclear weapons — the kind of expertise already applied to the nuclear reactor test and safety work of Bill Snyder's Nuclear Fuel Cycle Directorate 6400, the solar systems expertise of Virgil Dugan's 6200 organization, the pulse power systems of Pace VanDevender's 1200 group, the satellite expertise of Leon Smith's 5300 organization, the materials and process work of Dick Schwoebel's 1800 organization,



A SPACE POWER CONCEPT (illustrating the kind of technology that will be evaluated by Sandia under a new assignment from the Strategic Defense Initiative Office) shows an orbiting platform containing a nuclear reactor at the bottom of the center section. The cutaway center shows a turbine and electrical generating equipment. The center shell and outside ring radiate waste heat into outer space. The entire station rotates around a central shaft to produce an artificial gravity field. Over a seven-year timetable, the technology for the SDIO Multi-megawatt Space Power Supply will be developed with contributions from many DOE, NASA, and Air Force organizations.

and the high temperature power electronics of Fred Vook's 1100 organization. In an evaluation task, systems analysis and modeling will play a large part — we'll be asking for help from experts throughout the Labs."

Lou is quick to point out that nuclear

power generating systems are not the only ones to be examined. The Space Power Program will evaluate technologies and concepts for solar and chemically powered systems as well.

"We will be evaluating power systems  
*(Continued on Page Four)*



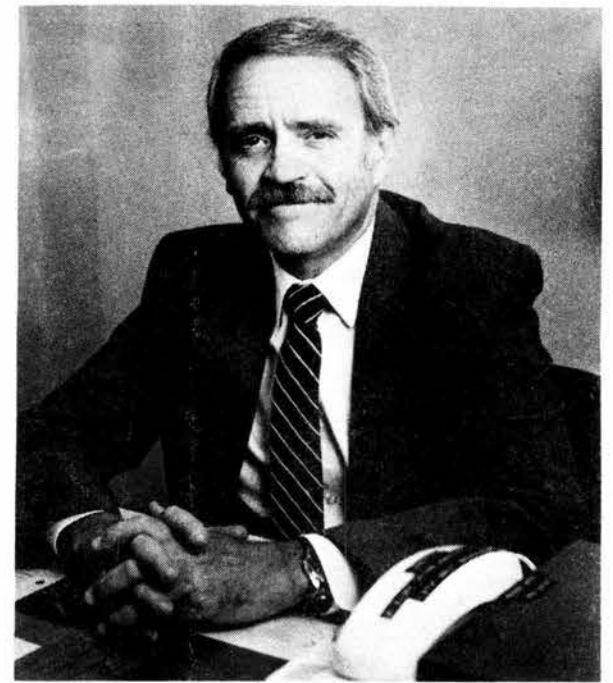
# Antojitos

**Just Mellow Up and Chill Out** Current teen slang, says the National Education Association's *NEA Today*, includes such verbal delicacies as bump'n (sounds good, referring to music), crush'n (looks good, referring to clothes), and hit'n (tastes good). Then there's chill out (be cool, take it easy), mellow up (calm down), stoked or siked (as in "psyched") meaning really excited, and s'up (a greeting meaning "what's up?"). Teens apparently use nouns too: crib means home; rents means parents; someone who's out of it is a squid, dork, geek, narc, juice box, or stud (I once wanted to be the latter; guess I've finally made it); chief is a term of address used for nearly everyone, and neat whistle is a person wearing weird clothes (or, I assume, wearing bobos, which are cheapie running shoes). Some have been around long enough that even I am aware of their existence: bail (to cut a class; also a putdown meaning to forget or ignore something, as in "Bail that"), book'n (going very fast), flake (fail to keep an appointment), and kick back (relax). Some real weirdos (that's from an earlier time): gnarly means gross, raunchy, disgusting (though it may mean good in some places); bust is an insult ("Bust you out"); and kill is really good (as in "That's so kill"). And, if I've used any of these wrong, it's tamale time (time to be embarrassed).

Lexicographer Eric Partridge (who compiled the *Dictionary of Slang and Unconventional English*) notes that "People use slang to achieve an arresting or startling effect; show they belong; show others they don't belong; and avoid being understood by those not in one's group." Ah, yes — and any similarity between slang and the technical jargon used in an R&D lab is not entirely coincidental.

\* \* \*

**1985 Merit Review** Never have so few worked so hard to allocate so little to so many. ●BH



JIM MARTIN (3400)

## Jim Martin New 3400 Director

Jim Martin was named Director of Industrial Relations and Property Protection 3400, effective May 16. He succeeds Charles Brumfield who returned to AT&T Technologies.

After graduating in 1963 from Oklahoma State University with an MBA, Jim joined Sandia's wage and salary organization. He transferred to the administrative systems group as an analyst and, later, was promoted to section supervisor in accounting. He was named division supervisor in payroll and disbursements auditing and later headed divisions in security, purchasing, property management, and systems and appraisals division. He became manager of Plant Security Department 3430 in December 1978.

One of Jim's primary interests is with the emergency services activities in the state. He's served as president of the Sandia Search and Rescue Team and is a member of the NM Emergency Services Council, formerly serving as a member of the Board of Directors for that group. Other interests include ham radio, backpacking, and photography. Jim has two children. He and his wife Carol live in the NE heights.

### Medical Corner

## Wanted: Non-Exercisers (and Others) For Pilot Fitness Program

by Susan Harris (3330)

As the medieval poet wrote, "Sumer is icumen in." Do you find yourself a bit soft after a long cold winter? Do you wonder how you'll ever get back into shape for swimming, hiking, biking, and wearing those short shorts?

Well, the Medical Department has the answer. Join our pilot fitness program. Here's how it works:

In cooperation with UNM exercise physiologist Laurel Traeger MacKinnon, Medical will offer a pilot fitness program for 30 to 40 employees. As a pilot program, it will do just what the name implies — pilot or steer a future direction. Of course, we'd love to start big and offer a fitness program for all of you right now, but we don't have the staff or facilities just yet.

So we start small with a pilot to gain some experience in running a fitness program, work out some of the bugs, so to speak. And we use the experience we gain now to develop a well-organized program for all employees at some future time.

We are looking for some very special people to participate in the pilot program. First, you must be 40 years young or younger and preferably a nonsmoker. Second, you must be in good health with no cardiovascular disease and relatively free of risk factors such as high blood pressure, high cholesterol, or obesity. Third, you must not be exercising more than twice a week right now — preferably not at all. Fourth, you must be able to participate in classes two to three times a week during the months of July, August, and September.

The program will consist of exercise and flexibility testing and body fat estimation before and after the three months of classes; of course, you will be given all test results. You will have a choice between aerobics and walking/jogging classes. Aerobics will meet MWF 4:45 to 5:45 p.m. in the cafeteria, and, yes, men are welcome to join. Walking/jogging will meet TTh 7 to 7:45 a.m. at the KAFB track. Shower facil-

ities are available at the Base Gym. Classes will run for 12 weeks, from July 8 to Sept. 27.

In addition to the exercise classes, a series of brown bag lunch seminars will be open to all employees. MacKinnon will speak on various topics and answer your questions relating to exercise. Dates and topics for these seminars will be announced later.

So, if you'd like to help us develop a fitness program — and get yourself in shape at the same time — then walk, jog, or dance your way to Medical and fill out an application today. If we have more volunteers than we can accommodate, we will select a group for this summer, keep the rest of the names on a waiting list, and offer the program again as soon as possible.

If you have questions about the program, please call Debi Edwards, R.N., Sandia Medical, 4-2471.



## LAB NEWS

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**SANDIA NATIONAL LABORATORIES**

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## Supervisory Appointments

WAYNE GOODMAN to supervisor of Surface Science Division 1134, effective April 1.

Wayne joined the Labs in August 1980 as an MTS in his current division, formerly called surface physics, where his work has been in the area of surface science catalysis. He won the 1983 Ipatieff Prize of the American Chemical Society for his research on catalytic surfaces and his contributions to metal catalysis (LAB NEWS, Feb. 19, 1983). Last year, Wayne was also named one of "America's Top 100 Young Scientists" by *Science Digest* for his catalytic research (LAB NEWS, Nov. 23, 1984).

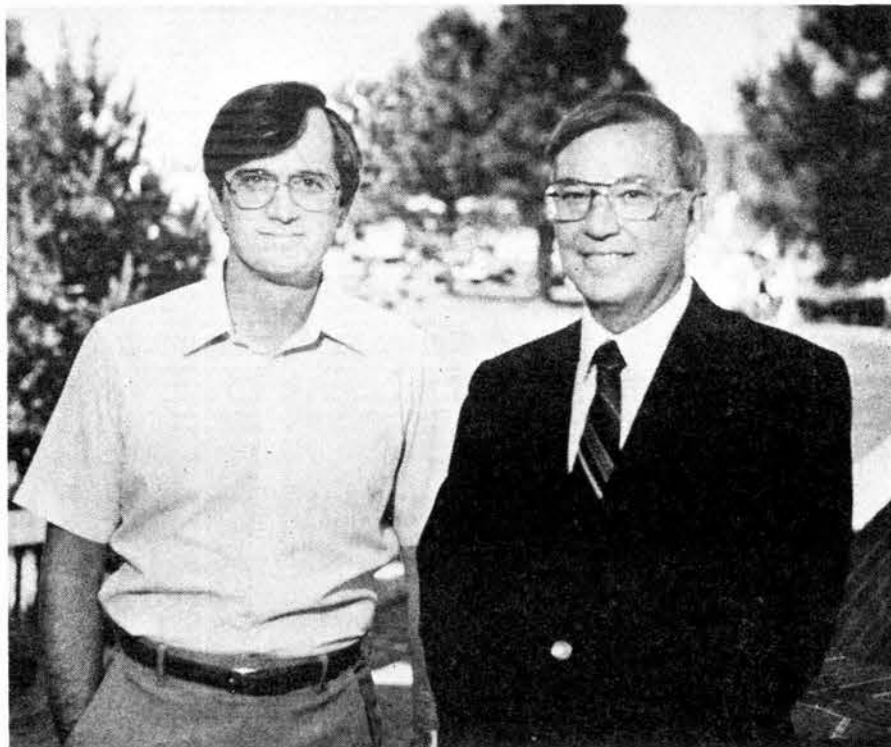
He received his BS in chemistry from Mississippi College and his PhD in physical chemistry from the University of Texas. Wayne is a member of the American Chemical Society, the American Vacuum Society, the Materials Research Society, and the Catalysis Society. He enjoys tennis and handball. Wayne and his wife Sandy have one child. They live in the NE heights.

\* \* \*

FRANK KEENE to Assistant to Vice President 7000, effective May 1.

Since joining Sandia in April 1953 as a property clerk, Frank has worked with the standards organization, accounting, a support group for the research directorates, auditing, and budget. He's served as an administrative assistant to three directors in components development and, since April 1983, has been administrative assistant for Jim King, Director of Materials Process Engineering and Fabrication 7400.

Frank received his BS in business administration from the U of A and has done graduate work at UNM in industrial management. He enjoys woodworking and walking. Frank and his wife Joanne have



WAYNE GOODMAN (1134) and FRANK KEENE (7000)

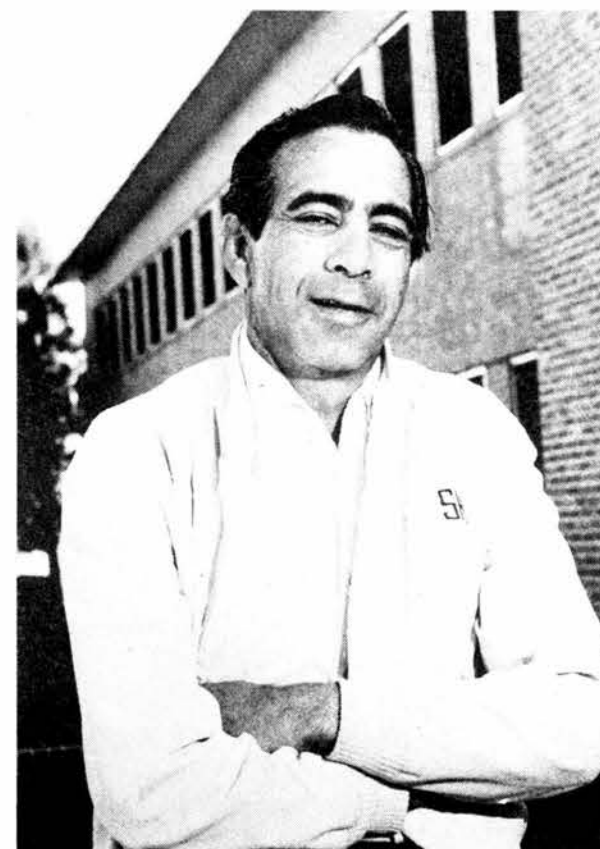
five sons, one still at home. They live in the NE heights.

\* \* \*

SHAWKEET HINDI to supervisor of Reproduction, Mail Services, and Records Management Division 3154, effective May 1.

Joining the Labs as a document clerk in March 1957, Shawkeet advanced through all the graded positions related to printing, engineering reproduction, and the print shop. He was promoted to supervisor of photolithography section in 1967. He transferred to print shop scheduling and contract printing section and, in 1973, Shawkeet's group absorbed the rapid service and engineering reproduction sections and became Duplication Section 3154-1.

Shawkeet was raised on a ranch near Duran, NM, and attended UNM. His primary interest off the job was auto racing; he was a driver for 20 years. Although he still has close ties with the racing community, his interest now is raising Arabian horses. Shawkeet and his wife Lois have four children. They live in the SE heights.



SHAWKEET HINDI (3154)

**Continued from Page One**

## Bond Campaign

average of \$22.70 per month per employee. Forty percent of Sandians signed up for a bond a month.

Bond Committee Chairman Dave McCloskey (1530) is more than pleased, he's proud.

"Every Vice-Presidency did a tremendous job in this campaign," Dave says. "All VP organizations at Albuquerque exceeded the Laboratories' goal, while Livermore had the largest increase in percentage of participation. I particularly want to mention the records of the Plant Services, Security, and Secretary organizations that show large increases in participation to 100 percent levels. My thanks to all who helped in the campaign."

Fourteen organizations achieved 100 or 99-plus percent participation in the Bond drive. They are 100, 1100, 1200, 1500, 1600, 1800, 2100, 3300, 3500, 4000, 5200, 5300, 6300, and 7200.

## May-Oct. '85 Savings Bond Interest Rate Announced

New market-based interest rate for Series EE Savings Bonds issued between May 1 and Oct. 31, 1985, is 9.49 percent for their first semi-annual interest period, the Treasury Department announced this month. This is the sixth semi-annual rate to take effect since market-based, variable rates were introduced on Nov. 1, 1982.

The rates are changed in November and May. Savings Bonds purchased since the rates went into effect and held five years or longer are paid an average of the announced semi-annual rates. The market-based rate is 85 percent of the average return on Treasury five-year securities during the previous

six months. New Bonds are guaranteed to earn a minimum rate of 7.5 percent per year; compounded semi-annually, when held at least five years. New Savings Bonds held less than five years earn interest on a fixed, graduated scale ranging from 5.5 percent after one year to 7.25 percent after 4½ years.

Previously announced market-based rates:

Nov. '82 to April '83	11.09%
May '83 to Oct. '83	8.64%
Nov. '83 to April '84	9.38%
May '84 to Oct. '84	9.95%
Nov. '84 to April '85	10.94%

These, combined with the new rate just announced, average 9.92 percent for the six periods.



## Teamwork Makes Proposal Possible

Sandia's participation in the current Space Power Program began in October 1982 with the formation of Advanced Power Systems Division 6433 under Lou Cropp. Assisted by Marlin Aker's Experimental Systems Design Division 6452 and with guidance from Lt. Col. Jim Lee of the Air Force Weapons Laboratory at KAFB, Division 6433 began a survey of space power concepts and available technology and participated in a number of preliminary projects — including preparation of a conceptual proposal in March 1984 with Los Alamos (using Sandia New Initiatives funds). LANL prepared the nuclear reactor portion of the concept; Sandia was responsible for the remainder of the system proposal — conversion of energy from heat to electricity, energy storage, conditioning and distribution of the electrical energy, spacecraft structures, reactor instrumentation, communication and control, and technology for reactor safety, safeguards, and reliability.

After six weeks of concentrated effort the team (an ad hoc group from throughout the Labs) delivered an impressive document incorporating the LANL contribution.

Team members included Bill McCulloch (6433), Hall Bennett (334), Dick

Jones (7553), Rick Pepping (314), Dick Salzbrenner (1832), Jack Jackson (311), Pat McDaniel (2321), Bob Wemple (6452), Jeff Philbin (6452), Ray Leuenberger (7484), John Andersen (5161), and Bill Sullivan (2542).

Soon after completing this task, a team composed of people from Sandia, Oak Ridge, Los Alamos, Air Force Weapons Lab, NASA LeRC, and DOE/AL was asked to reduce similar documents from eight DOE laboratories, two Air Force Labs, and NASA LeRC into an overall draft technology development plan and deliver it to SDIO within seven days. After four days of work by the team, Sandia took the output and converted it into a final 220-page draft in the next three days.

"We did it," Lou says, "with many hours of overtime and tremendous support from secretaries Juanita Evans, Betty Turk, Judy Mattingly, Joan Geer, and Kay Lang. We finished about 2 a.m. and Lt. Col. Lee boarded a plane at 5:30 a.m. to deliver the classified document to the Strategic Defense Initiative Office. Later we heard that the report was labeled an 'Oscar-quality document.' That work provides a starting point for our new effort in evaluating concepts and technology for the Multi-megawatt Space Power Program."

## The SNAP Program — A Brief History

In February 1961, Sandia undertook an Aerospace Nuclear Safety Program at the request of DOE's (then AEC) Division of Reactor Development to study nuclear safety for radioactive aerospace power supplies. Included was responsibility for research and development studies, ground testing, and flight test systems analysis.

From this beginning, the Sandia effort grew to more than 100 Sandia scientists and engineers heavily involved in space power systems. The next year was the beginning of the SNAP (Systems for Nuclear Auxiliary Power) that provided power for weather and navigation satellites and, eventually, power for scientific instruments placed on the moon by astronauts. Sandia contributed to SNAP 9A, 19 and 19A, and in 1966 assumed technical direction for the AEC's isotope power program.

The SNAP units were primarily radioisotopic generators, converting heat from U-238 fuel rods directly into electricity. They weighed about 28 pounds and furnished up to 25 watts of power for a design life of a year — many performed far better.

In 1964 Sandia conducted a reentry flight demonstration (RFD-2) to investigate the safety of aerospace nuclear systems. Dummy fuel capsules, simulating a SNAP 19 and containing tracer elements, were launched from Wallops Island, Virginia, to an impact area near Bermuda. RFD-2 included tests of generator disassembly during reentry, thermal history of fuel elements, correlation of flight test results with analytical predictions,

and acquisition of data on capsule ablation and release. All of the test objectives were successfully achieved.

The SNAP 27 was developed to provide 50 watts of power for the scientific instrumentation station on the moon. Sandia's safety evaluation team investigated all phases of the Apollo mission, concentrating on containment of the nuclear fuel elements. The team focused on the abnormal environments that might jeopardize such containment — including possible fireball exposure resulting from launch abort, reentry heating, capsule impact on the moon, and immersion of the capsule in seawater or possible soil burial back on earth.

In May 1968, two SNAP 19 space isotope generators, part of a NIMBUS B weather satellite, were lost off the California coast during a launch abort. Sandia directed the successful underwater search and helped recover the units with the ALVIN submersible from 300-foot depths.

In all, 11 SNAP units and one nuclear reactor were launched during the 10 years from 1961 to 1971. Sandia's involvement in the program continues in the Quality Assurance Department 7250 under Bill Kraft, which has performed the QA acceptance functions for all the space power systems for the past 20 years. Currently the Sandia QA group is handling the QA acceptance and reliability functions for the 300-watt radioisotopic thermoelectric generator for the upcoming Galileo mission to Jupiter. Its design life is 4.2 years. Launch is scheduled for May 1986.

## Sandia Space Power Program

for platforms in space — applications well beyond the capability of existing technology," Lou continues. "Our job will be to make judgments about technical feasibility, about needed technology development, and about the bottom line — reasonable costs."

The requirements for the new power supplies for space call for 10,000 times more power than the old SNAP units and for a longer duration. The new systems will provide tens of megawatts of electricity continuously and short bursts of hundreds of megawatts when needed. The systems must be small, lightweight, and reliable — able to perform for years without maintenance.

"Sandia's Quality Assurance organization had responsibility for the reliability of the SNAP units for years, long after other Sandia responsibilities in the program had been completed," Lou says. "The SNAP generators achieved a remarkable record in reliability."

The multi-megawatt space power technology development program has a seven-year timetable. At the end of this period, the technology advances should enable engineers to design an actual system.

"Evaluation is only part of the work that Sandia will contribute," Lou says. "We expect to play a major role in providing independent safety, safeguards, and reliability analyses. We will also contribute to technology development in the areas of instrumentation, command, communication, and control plus power electronics and materials research beginning in FY86. The project organization for this work will be Nestor Ortiz's Nuclear Fuel Cycle Systems Safety Department 6430.

"Sandia has an opportunity to make a valuable contribution to a program of the highest national importance," Lou says. "It offers exciting prospects."

### Good Speech / Good Article



"How... can a spoken scientific presentation be converted into a good scientific paper? With great difficulty. Details have to be added, statements supported with references, sub-headings inserted, digressions pared, and figures and tables condensed, and the line of thought or 'critical argument' has to be clarified. The key to successful conversion of a speech into a manuscript is not to regard the speech as an intermediate form of communication between the manuscript and the earlier drafts and source documents but as a totally separate branch on the tree of scientific communication. This means, unfortunately, that preparation of the speech, however successful its presentation may have been, saves little of the labour that awaits the author of a scientific manuscript."

Peter P. Morgan in *Canadian Medical Association Journal*

### Scientific Literacy



"The scientific literacy of American students has declined, and we have before us the means of raising achievement-test performance in science, mathematics, and other subjects. The questions remain: Should we raise the scores? What mental qualities would this foster? And what economic and non-economic good would be served? Japan — a democracy that has chosen to invest heavily in human capital, particularly in excellence in mass education — provides an interesting case in point, and if not a model to emulate, then a standard to aim for or exceed."

Herbert J. Walberg in *Daedalus*



## High Tech Needs Archaic Art

On a heavy anvil in Sandia's Foundry, Robb Gunter (7481-5) creates sparks as he hammers white-hot metal heated in a coal-fired forge making parts for a high tech laboratory. Blacksmithing is an ancient art, one of the cornerstones of civilization. Why, after some 2000 years of progress, does Sandia need a metalworking technique more associated with swords and broadaxes than nuclear weapons?

"Occasionally," Robb says, "I can save the company time and money."

The mission of Sandia's process, development, and fabrication laboratories is not production. Working with engineers and scientists, the people in the shops develop the technology needed to fabricate prototype weapons.

Robb's blacksmithing specialty fits into this mission because he can quickly produce — within the limits of the forge, the hammer, and his skill — a needed one-of-a-kind item.

He has made special tools from hard steel — tongs, grippers, and guide bars. He has made special hardware fittings and forge-welded o-rings and d-rings from bar steel that are stronger than welds made with arc equipment. He has made copper parts for lightning tests, titanium parts for special applications, and many items from aluminum and stainless steel. He heats the metal stock in a forge, then hammers it into the desired shape on an anvil. A second heating of the finished piece in the forge stress-relieves the material. The part can then be heat treated to the desired hardness.

One of Robb's more difficult jobs was a piece for a reactor cooling experiment. The part was a double stainless steel tube (one tube inside the other) wound a dozen times into a six-inch diameter coil then doubled back through the center of the coil. The inner tube had to remain separated from the outer tube and relatively close tolerances had to be maintained. For the piece, Robb made special mandrels and fittings to help shape the tubes as he heated the metal section by section and bent it around the mandrel into a coil. In addition, he fabricated a special pressure apparatus that forced argon inside the tubes to maintain their separation during the forming process and to prevent scaling.

"It was an unconventional piece," Robb says, "very difficult to fabricate. I don't think conventional machining methods could have produced it."

Robb spends about 30 percent of his time at the forge. The blacksmithing is reserved for those jobs that can be done quickly — about two hours is the average time for making a special set of foundry tongs, for instance. Or for jobs that can be hammered into a rough shape, then finished to close tolerances in the machine shop, a method that might save several hours of machining operation. Or for jobs where hammering hot metal makes a stronger part than "cold forming," the usual method used by Project Machining and Metal Forming Section



BLACKSMITH Robb Gunter (7481-5) hammers white-hot steel into a heavy duty lifting hook for a crane. At right, he displays a double tube of stainless steel heated, hammered, and shaped into a coil for a reactor cooling experiment.

7481-5. A number of large hydraulic machines bend, press, and shape metal with brute force — up to 180,000 pounds with one of the large shaping machines. The machines are very effective in forming metal, but bending a piece of metal puts stress in the piece and reduces its effective strength. A blacksmith can sometimes increase the strength of a metal piece by hammering, compressing its mass and forcing the grain structure of the metal to conform to the contours of the piece.

Charlie Salazar, 7481-5 supervisor, decides which jobs can be handled by blacksmithing. "There are those times when someone needs, usually right away, a replacement part — a fitting, a bracket, or a connector piece — for some piece of shop equipment. Robb can do this service. He can usually repair the original piece or forge a new part within an hour or so. We also look for those jobs, such as the tubing for the reactor cooling experiment, where Robb's skill can make a unique and valuable contribution."

"Blacksmithing is my hobby," Robb says. "I recently moved into a new house in the North Valley and added a 1200-square-foot shop where I'll be teaching blacksmithing courses evenings and weekends."

Robb is a charter member of the Southwest Artist-Blacksmiths Association and is a recognized artist-craftsman. His metal sculptures of delicate roses with blooms, buds, stems, and foliage have been displayed at the State Fair.

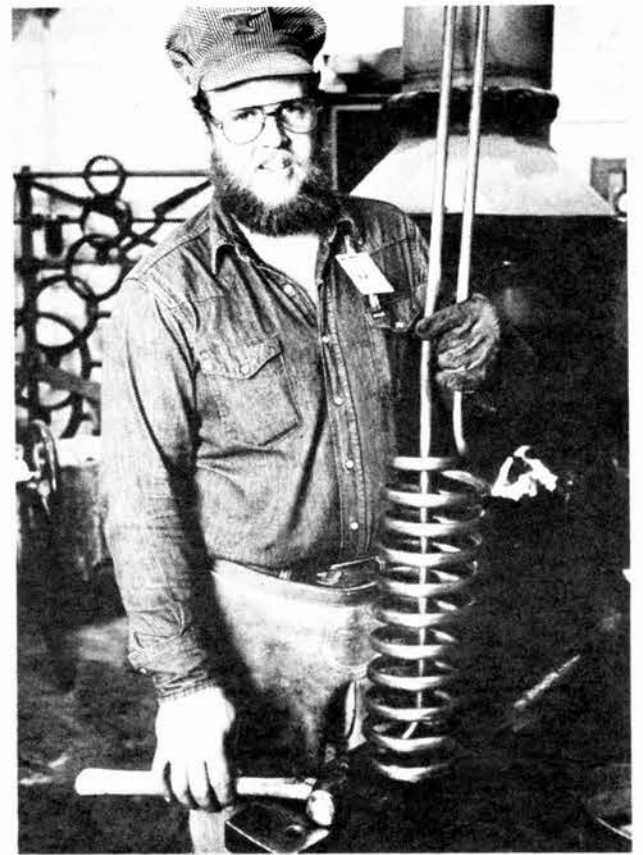
"I can't seem to make enough of them," Robb says. "I have back orders. But as an artist in metal, I want to move into new areas and explore the limits of blacksmithing. At Sandia, working with the forge provides new experiences in exotic materials. I keep learning, and that's important."

### Sympathy

To Sharon (6311) and Lee Jensen (6256) on the death of his mother in Idaho, May 11.

To Neil Davie (7541) on the death of his infant son, May 6.

To Carmen de Souza (6330) on the recent death of her father.



John Zeglis



Larry Lemasters

## New Sandia Board Members Named

John Zeglis, Executive Vice President and General Counsel of AT&T Technologies, and Larry Lemasters, Executive Vice President, AT&T Bell Laboratories, have been elected members of the Sandia Corporation Board of Directors.

Other board members are: Donald Procknow, Vice Chairman of the Board, AT&T Technologies, Inc.; Ian Ross, President, AT&T Bell Laboratories; Thomas Thomsen, President, Technology Systems Group, AT&T Technologies, Inc.; Tom Cook, Executive Vice President, SNL; George Dacey, President, SNL; and Lee Bray, Executive Vice President, SNL.

### Congratulations

Don (3551) and Ruth Devoti, a daughter, Marisa Alessandra, May 8.

Paula Capps (1231) and Steve McAllister married in Albuquerque, May 11.

Matilda (6323) and George Shendo, a son, Jordan, May 9.

Agnes (7815) and Donald Fragua, a daughter, Tenise, April 29.



# Take Note

The Third Annual Children's Miracle Network Telethon to benefit the University of New Mexico Hospital Children's Services will be aired on KOB-TV on June 1 and 2. The Osmond Foundation, a nonprofit organization founded by the performing Osmond Family, produces the show with local segments produced by KOB-TV in cooperation with UNMH Children's Services. Money raised by the telethon stays in New Mexico; last year the telethon funds supported programs utilized by over 35,000 New Mexico children. Telethon volunteers include co-chairmen Marie Osmond and John Schneider; co-hosts Marilyn McCoo and Merlin Olsen; national sports chairman Joe Theismann; and local hosts Dick Knipping, Emily Akin, and Greg Gurule. For more information contact Arlene Roth, telethon coordinator, UNM Hospital, 843-2121.

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The American Lung Association of NM has announced findings that air pollution levels can be much greater inside your home than outside because of better insulated, airtight houses. Dangerously high levels of carbon monoxide and nitrogen dioxide are being found where improperly vented wood, kerosene, and natural gas burning appliances are operated. Critically high levels of formaldehyde can be found where certain types of foam insulation have been used. Tobacco smoke also contributes to these high levels of pollutants indoors.



DAVE SMALLWOOD (DMTS) of Vibration Testing Division 7542 has been elected a Fellow of the Institute of Environmental Sciences "for contributions to computer controlled environmental testing, in particular for development of multiple shaker random control, involving time domain, randomization, and cross coupling control." Dave has worked in acoustic and vibration testing since joining the Labs in 1967. He's also served as chairman of the IES Digital Control Committee.

For information on what you can do to ensure clean, healthy air in your home, contact the American Lung Association of NM for the free brochure "Air Pollution in Your Home?" and a free "Indoor Air Quality Checklist." The Association is located at 216 Truman NE, or call 265-0732.

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Spectators are invited to watch 120 Union- and Confederate-uniformed volunteers from living history groups in Colorado, New Mexico, and Texas reenact the 1862 Civil War Battle of Glorieta at 11 a.m. on June 16. This annual event will occur on the actual site of the battle, 19 miles southeast of Santa Fe, at Pigeon's Ranch. The still-standing structure and adjacent Sharpshooters' Ridge anchored the Union right flank until Confederate troops overran the position. Confederate forces then used it as a field hospital until Union forces retook the site. New Mexico historians hope to draw attention to the endangered site, which is being threatened by real estate developments and housing construction.

Anyone wishing to help save the site, which was also a Santa Fe Trail stagecoach station, is encouraged to send a tax-deductible contribution to the Pigeon's Ranch Preservation Fund in care of the Historical Society of NM, P.O. Box 5819, Santa Fe, NM 87502.

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The Easter Seal Society of NM has begun accepting applications for its second year of summer camp programs for persons with disabilities. The camp program at Kamp Kiwanis, a facility built and maintained by the Southwest District Kiwanis Foundation, is adapted to allow full participation by everyone, no matter what the degree of disability may be. The camp is staffed mostly by teachers or by specially trained college students interested in the rehabilitation field.

For more information about making an application as a camper or staff for this season, contact Karen Wright at Easter Seals, 888-3811.

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The U.S. Navy is looking for a few engineers/scientists to fill positions in the Pearl Harbor Naval Shipyard Reserve Unit. Reserve duty consists of one weekend per month at the Albuquerque Reserve Center on Wyoming plus a two-week annual tour at Pearl Harbor. The Shipyard is about the size of Sandia Labs in personnel and budget and has many tough technical and managerial problems related to ship repair. Qualified persons will be commissioned as Engineering Duty Officers in the U.S. Naval Reserve. Currently the unit is staffed by Sandia and Los Alamos people in roughly equal numbers. If you have an MS or PhD in engineering, physics, mathematics, or computer sciences; are under 35 years of age; and would like to put your technical skills to use in supporting a critical part of the Navy, please contact Len Connell (332), at 4-6984.

\* \* \*

The Albuquerque arts community presents "Celebration of the Arts," a month-long festival of exhibits and performances that will happen all over the city in June. The Celebration focuses on both visual and performing arts.

Joe Laval (3163) has prepared an exhibit, "Learning to Draw," a computer-generated graphics and video show to be presented June 3 at Copper Square Atrium. Other events include Pueblo Indian ceremonial dance performances, a low rider exhibit/competition, The Sam Shepard Film Festival, the New Mexico Arts and Crafts Fair, Hispanic theater, readings by New Mexican writers, a masked/costumed Beaux Arts Ball, and more.

Exhibits at Albuquerque's museums, galleries, public spaces, and private gardens will feature New Mexican artists and subject matter. The NM Symphony Orchestra, the Southwest Ballet, the Albuquerque Opera Theatre, the Albuquerque Children's Theatre, the Albuquerque Civic Light Opera, and other local groups will perform indoors and outdoors at locations including the Rio Grande Zoo, Old Town, Sandia Crest, and the KiMo.

The LAB NEWS will cover many of the activities in the Events Calendar. A complete Celebration calendar will be published by *The Albuquerque Journal* on May 31, and will be distributed in Albuquerque through June. For more information, call Alice Kaufman, Celebration Coordinator, at 843-7657.

\* \* \*

*Smithsonian* magazine (May 1985) has devoted 10 pages to an article and color photographs on Sandia National Labs. "Torture-testing High Technology in New Mexico" is the title of the article written by James Page, Jr. Personnel from Public Information Division 3161 coordinated Page's visit here.

\* \* \*

The Sunport Optimist Club has been granted permission by the base commander to form a new Optimist Club on KAFB. Meetings are held every Thursday at 7 p.m. at the NCO Club. Jim Tichenor (2533), president of the Sunport Optimists, invites anyone interested in club membership to be a dinner guest of the new club and find out about their programs. For more information, call Jim at 265-3843.

\* \* \*

Dennis Kirson (7862) was elected president of the Rio Grande Chapter of the Society of Fire Protection Engineers at their annual meeting in Albuquerque, May 10.

\* \* \*

Stan Love (3522) was recently appointed by the State Board of Education to the New Mexico Council on Vocational Education. This 13-member advisory group reports to various state and federal agencies on services and activities that determine the effectiveness of vocational education programs in New Mexico.

\* \* \*



Jefferson Middle School is conducting several fund raising events and asking for contributions to help finance a trip to Maryland so its state championship team in the Olympics of the Mind can compete in the national finals.

The Jefferson team won the state competition by fielding a robot (built for less than \$40) in the competition, which required the device to perform several specified tasks. Purpose of the Olympics of the Mind is to encourage and develop creative problem solving. Chuck Carson and Hsi-Tien Chang (both 6241) have young sons who are members of the team.

Contributions may be mailed to Olympics of the Mind, c/o Amy Larson, Jefferson Middle School, 712 Girard Blvd. NE, Albuquerque, 87106.

\* \* \*

Peggy Wallace (152), Mary Ann Dew (4010), and Eunice Becker (3141) are active in the upcoming "On Track for John Baker" event at the Albuquerque Little Theatre on Friday, June 7. The evening of song and dance entertainment features performances by the Sweet Adelines, the Desert Sounds (SPEBSQSA barbershop quartet), the Cloggers dance group, a quartet from the ACLOA *Fantasy* production, Phil Lenk, and the Lewie Wickham Trio. Emcee is Larry Ahrens of KOB-AM.

The event is a benefit for the John Baker Memorial Warm-Up Lounge proposed for UNM's new track facility. John Baker was a UNM Olympics-class runner who died of cancer at the age of 25. He was a coach at John Baker Elementary School (formerly Aspen) and in training for the 1972 Olympics at the time of his death. His heroic story has been the subject of a book and a movie.

Peggy and Mary Ann are friends of John's mother Polly, all former members of Sweet Adelines. Now Polly has terminal cancer. Her dream is to see the Memorial completed before her death.

Tickets to the benefit entertainment are \$5 and are available from Peggy (4-8853) or Mary Ann (6-4870).

\* \* \*

Retiring this month and not shown in LAB NEWS photos are Mac Groll (122), Robert Stewart (3435), Arthur Jacobs (3426), Dave Watt (7474), and Kenneth Pilkington (325).

\* \* \*

Ben Ortega (3424), who moonlights as a disk jockey on KFMG, had never been on a motorcycle before, but he won a "hot dog bite" event from the back of a Honda Gold Wing recently. The occasion was a benefit for Special Olympics sponsored by the Gold Wing Road Riders Association, and the event demanded that various media celebrities ride as passengers on the big bikes piloted by their owners. George Greer (7543) steered Ben close enough to a mustard-laden weiner dangling from a string to snatch over half of it with his talented mouth. Other Sandians who helped



YOLANDA PADILLA-VIGIL (3511) displays her YWCA's Women on the Move Achievement Award for (left to right) Bill Brinkman (1000), Everet Beckner (6000), and Art Davie (3000). Yolanda was selected winner in the Business - Non-Managerial category of the competition. The YWCA presented awards in 12 different categories "to acknowledge and honor women from the Albuquerque area who have made significant contributions to their companies, organization, and/or community; and to acknowledge businesses and organizations that give opportunities to women to achieve." The other Sandia women nominated were: Linda Branstetter (1524), Margaret Chu (6431), Cheryl Haaker (2825), Carolyn Hart (6256), Susan Navarro (2822), Arian Pregoner (1231), and Ruth Whan (1820) in the Other Professions category (there was no Science/Technology category); Julia Gabaldon (3163), Media; Karen Shane (3163) and Shirley Wallace (155), Business - Non-Managerial; Dyan Clements (7263), Religion; and Margaret Wetzel (3521) and Gloria Zamora (400), Political Action.

stage the benefit, which netted Special Olympics some \$2620, include Jerry Brock (7531), Penny Fowler (7251), and Bob Hufnagel (EG&G, assigned to 5249).

\* \* \*

The intersection near the elementary school on Wyoming is no longer marked by flashing yellow lights and a 15 mph speed zone during the lunch period. Studies show that children could safely cross Wyoming during normal traffic light cycles. Nevertheless, motorists are asked to be cautious in that area during times when the students are outside the school building. According to Base Safety Officer Roland DeRose, motorists should be especially cautious — that means slow down — during the students' arrival time, shortly after 8 a.m.

\* \* \*

Results of seat belt survey: 517 Sandians responded to the recent *Weekly Bulletin* questionnaire on the wearing of seatbelts. Of those, 420 said they used seatbelts both before and after Feb. 1, the date the Base announced a crackdown on vehicle occupants who weren't using belts. Another 76 respondents said they began buckling up on Feb. 1. And 21 said "Never." No valid employee percentages on seatbelt wearing can be drawn from these data, according to Kathleen Diegert of Statistics, Computing, and Human Factors 7223. But Safety thanks all those respondents who gave many helpful (some quite pungent) suggestions on how awareness of seatbelt advantages might be raised.



KEN FRAZIER'S (3161) latest book, *The Solar System*, is the current volume in the Time-Life series, "Planet Earth," which examines the earth's landforms, its seas and continents, and finally — Ken's topic — the earth's place in the cosmos. This is Ken's third book; his first was published in 1979. This month Ken travels to Boulder, Colo., to receive the George Norlin Award, presented by the University of Colorado Alumni Association as the highest honor given to CU alums. The award cites Ken's three books, his many articles, his editorship of "Science News" (1971-77) and "The Skeptical Inquirer" (1977-), and his work in the Public Information Division here at Sandia. Congratulations, Ken!



# Distinguished Members of Technical Staff Named

## 34 More Sandians Honored

Thirty-four new names were added this month to the list of Sandia's Distinguished Members of Technical Staff. The new honorees bring the total to 133 named to the DMTS roll since the program was announced in March 1983.

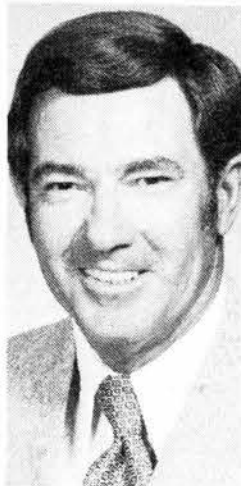
Each recipient receives a plaque, a pin, and a payment (\$1000 subject to taxes) during a presentation ceremony by the employee's vice president.

The program honors those individuals who have sustained outstanding performance or made a unique contribution to the technical missions of the Laboratories. All non-supervisory members of the technical staff with 10 or more years of professional experience are eligible. The eventual total of awards is limited to approximately 10 percent of the non-supervisory MTS population.

Of the 99 prior DMTS honorees, five have been promoted to division supervisors; three have retired.

### Don Lundergan (310)

For his sustained contributions to Sandia's programs, which have led to the establishment of important new areas of endeavor. His insight, creativity, and technical understanding have made and continue to make major contributions to the solution of national problems.



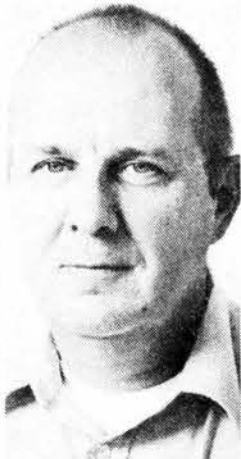
### Cliff Mendel (1264)

For his original theoretical and experimental research in support of Sandia's studies of high-altitude nuclear bursts, laser-matter interactions, magnetically insulated electron flows, electron and ion beam generation and focusing, and pulsed-power physics.



### John Phelan (1622)

For his contributions to guidance and control system development in support of exploratory weapons programs. His accomplishments have included the development of flight control systems for a wide variety of guided missile designs.



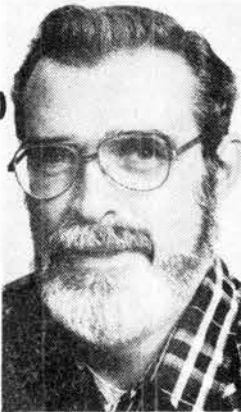
### Don Johnson (1632)

For his major contributions to parachute technology and advanced parachute system design. He has combined technical innovation with sound engineering judgment and energetic leadership to provide reliable, high-performance parachute systems for nuclear bombs and DOE/DoD/NASA rocket scientific payloads for over 25 years.



### Karl Schuler (1524)

For his outstanding contributions in solid mechanics research and the innovative application of analytical and experimental methods to weapon and energy engineering problems.



### David Gartling (1511)

For his outstanding contributions in software development for engineering analysis in support of weapon and energy programs. His consistent performance has resulted in a unique family of heat transfer and fluid mechanics computer codes that have provided the basis for weapon-component design studies, design and performance assessment for nuclear waste repositories, design of shipping containers for nuclear materials, and development of enhanced-energy recovery methods.



### Ed Beauchamp (1845)

For his significant contributions to ceramic science and technology. His consistent and outstanding performance has included fracture studies of glasses and glass ceramics, improved materials and processes for solar energy, and increased understanding of ceramic powder consolidation, and failure analysis of ceramic components.



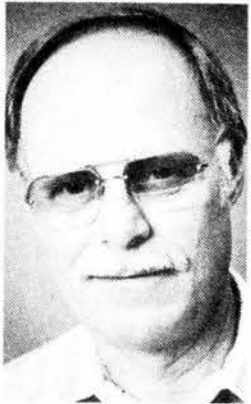
### Ralph Brown (2362)

For his outstanding, innovative contributions to nuclear weapon fire set development, including the design and development of the integrated fire set and the novel approaches used therein.



### Fred Duimstra (2545)

For his consistent, outstanding contributions to electromechanical component design and development, which have been characterized by innovative design, exceptional technical insight, and unselfish dedication.



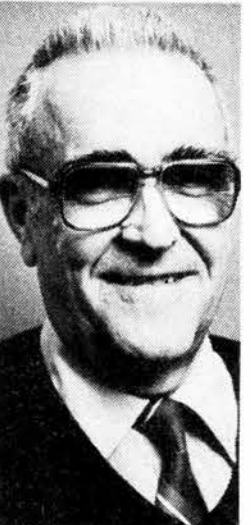
### Gene Aronson (2646)

For his consistent, significant contributions to the application of mathematics and computers toward the solution of a widely varied group of applied problems, including the design and analysis of data reduction systems, analysis of radar fuzing, signal analysis, control systems, and the modeling and optimization of physical/economic systems.



### Don Williams, Jr. (2811)

For his consistently outstanding contributions to Nuclear Weapons Complex CAD/CAM integration, including initial development of translation and communication procedures and pioneering efforts in the use of CAD/CAM for product definition, which have contributed materially to the successful application of CAD/CAM to weapons programs.



### Robert Cover (5215)

For his sustained outstanding technical contributions to the mission of the Laboratories in the design, development, implementation, and upgrade of the Department of Energy's Security Communication System for the Transportation Safeguards Division.



### Russell Maxwell (5264)

For his sustained outstanding technical contributions to the mission of the Laboratories, including weapon component design and development, energy technology development for Project DEEP STEAM, and access control system R&D for security applications.





**Jim McKenzie  
(5254)**

For his sustained outstanding technical contributions to the mission of the Laboratories, including his pioneering efforts in the development of semiconductor detectors, his research to characterize neutron spectra, his development of ultrasonic seals for use in international safeguards, and his technical contributions to the international safeguards community.


**Jim Scheibner  
(5232)**

For his consistent outstanding contributions in hardware design and development for major Sandia programs, including Christmas Island nuclear testing, nuclear readiness testing, COIN sensor development, and Air Force Physical Security Systems development.


**Jim Krone (5311)**

For his sustained, remarkable performance and conspicuous technical contributions to a number of Sandia missions, including several United States space projects, beginning with the VELA Satellite Program. He responds to complex technical challenges with consistently sound and timely designs and strong leadership. His striking vitality and signal determination have been crucial to the success of very difficult efforts.


**Glenn Prentice  
(5341)**

For his outstanding contributions in the fields of mechanical and structural analyses and design, as applied to numerous national security programs.


**Robert Scharrer  
(5145)**

For his significant contributions to nuclear weapons development and postdevelopment testing programs, from the development of High Resolution Telemetry (HRT) during the 1950s and 1960s to the sophisticated high-speed Terminal Data Analyzers (TDA) of today's WR system.


**Norman Baker  
(5111)**

For his sustained and significant technical contributions to the national nuclear weapons program, including overall system quality assurance responsibility for several bomb and warhead programs, membership in several quality assurance task groups that extensively revised product and drawing system definitions and modernized the overall QA approach; significant contributions to the successful design of four B61 mods, including the implementation of a new JTA design philosophy; and participation in various weapon concept and feasibility studies.


**Don Tipton (5151)**

For his outstanding contributions to nuclear weapon design, development, and testing. His specific contributions include electrical system design and project leadership of the W76/Mk4 Arming, Fuzing, and Firing assembly and the W88/Mk5 Arming, Fuzing, and Firing assembly for the Navy Fleet Ballistic Missile System.


**Edward Austin  
(5171)**

For his significant and sustained contributions to nuclear weapons development, including the Harpoon Phase 2 study, the W85 warhead for Pershing II, and the ASWSOW Nuclear Depth Bomb.


**Sig Thunborg, Jr.  
(6228)**

For his sustained and significant contributions to the nuclear weapon and solar energy programs at Sandia National Laboratories, especially in the design and manufacturing development of weapon handling equipment, exploratory weapons development, the Production Prototype Trough solar program, and the SPR III robotics maintenance project.


**Ken Wischmann  
(7472)**

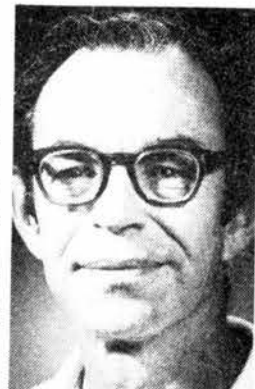
For his significant contributions to nuclear weapons development through innovations in polymer science.


**Martin Tierney  
(6312)**

For his significant contributions to analyses of weapons and space-exploration systems and to the management of radioactive material. His consistent, outstanding performance has produced estimates of lunar contamination, studies of risk in waste management, evaluations of mill-tailings remedial actions, and assessments of a geologic repository for radioactive waste.


**Al Chabai (7112)**

For his many contributions in the fields of X-ray induced impulse, properties of materials, cratering phenomena, and coupling of nuclear explosive energy to ground motion.


**Doug Browne  
(7121)**

For his significant contributions over many years to the design and implementation of software programs associated with highly successful digital data acquisition systems used in instrumenting underground nuclear tests.


**Bob Benham  
(7531)**

For his significant contributions in the development and effective implementation of new technology in the simulation of complex nuclear weapons environments including nuclear countermeasures and surface impact.


**Dave Smallwood  
(7542)**

For his creative contributions to the measurement and simulation of shock and vibration on nuclear weapons and subsystems, including shock testing with electromagnetic shakers, coherent control of multishaker excitation, and digital signal analysis methods.





**Rollie Baack (7265)**

For his continued outstanding service in the design, analysis, and development of environmental conditioning, explosive containment, and test configurations to enhance realism in laboratory testing of stockpile weapons.

**Philip Thacher (7242)**

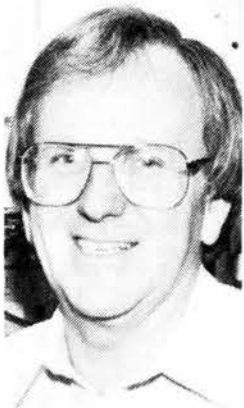
For his inventiveness and competence as a scientist in the fields of thermal and optical effects in ferroelectric ceramics, and of measurement standards of optical and nuclear radiation.

**David Braudaway (7241)**

For his technical accomplishments in improving standards measurements, in bringing recognition to the Sandia Primary Standards Laboratory, his contributions in enhancing the standards program of the DOE, and his extensive service on, or as an official of, national and international organizations devoted to establishing standards.

**Rudy Johnson (8312)**

For his significant technical contributions leading to improved designs of nuclear weapons components and for his outstanding interactions with production agencies. His consistent superior performance has included development of unique electroplating, electrojoining, and electroforming technologies critical to the success of numerous Sandia programs.

**Ralph Kelley (8181)**

For his significant contributions in the design, procurement and installation of laboratory computer systems including the Signal Processing System, the Security Perimeter System, and the Technical Control Center.

**Clay Mavis (8473)**

For his major contributions to weapons technology and solar central receiver systems; in weapons technology, for new developments in microwave standards and firing sets; in solar central receivers, for spearheading development of heliostats and their performance criteria, for transferring technology to industry, and for passing his skills to numerous new staff members.



## Welcome

**Albuquerque**

Alice Adams (22-2)  
Cathleen Ehgartner (22-2)  
George Mayes (7261)  
Rebecca Rosten (21-1)  
Elaine Torres (22-2)  
Lucille Verdugo (22-2)

**Kansas**

Kyle Thompson (7551)

**New Mexico**

Anna Trujillo (22-2)

**Pennsylvania**

Thomas Burford (7125)

## Feedback

*Q. Many of the hot water dispensers attached to water fountains in Bldg. 880 have been replaced with new ones. The problem is that they do not heat the water nearly hot enough to make a decent cup of coffee. Also, the water from all of them smells something like rubbing alcohol, and that smell ruins the taste of anything made using the hot water. I thought the smell might eventually disappear, but so far it hasn't.*

A. Maintenance checked the operation of the hot water dispensers on the water coolers in Bldg. 880 and adjusted the temperature to the highest setting recommended by the manufacturer. Also, environmental health personnel checked the water systems and found no health or odor problems. Please contact Telecon if problems occur in the future.

R.W. Hunnicutt - 7800

*Q. We need a pedestrian crosswalk painted across F Street from the Visitor Center to the parking lot.*

A. The Military and Sandia Traffic and Safety engineers agree that a crosswalk at this location would not be a safe thing to do. A crosswalk should be permitted only when there is an active traffic control device (traffic light or stop sign) to stop the traffic. The traffic light operates only from 4:20 p.m. to 5 p.m. each day.

When crosswalks are installed, pedestrians usually assume the right of way and thus gain a false sense of security. A crosswalk could result in a possible vehicle/pedestrian collision or a rear-end collision because of an abrupt stop for a pedestrian.

This road is a vehicle corridor, and the vehicles have the right-of-way. We suggest parking at the water tower lot or north of the cafeteria, or being very careful when crossing the street.

R.W. Hunnicutt - 7800

*Q. What is the policy regarding parking along M Street north of the Salvage Yard fence? This area is becoming more congested in the morning as cars pull off the road and then try to reenter the traffic flow after dropping off a rider. In the evening a*

*large number of vehicles are parked on both sides of the street, increasing the congestion to a dangerous level.*

A. Parking along M Street north of the Salvage Yard has been allowed in the past, but due to the unsafe condition in that area created by vehicles entering and exiting M Street from the roadside, the Traffic Liaison Committee (TLC) has recommended that the area be designated a no parking area. The Security Department will monitor the area to ensure that vehicles do not continue to park alongside M Street. This should alleviate the traffic congestion and make this area much safer for vehicles and pedestrians.

C.L. Brumfield - 3400

*Q. I have begun reporting any singles I see parking illegally in areas reserved for carpoolers. I would like to urge other carpoolers and singles to report such incidents also. But I have some questions: 1. What is the proper procedure for reporting such incidents? 2. What is done when a parking violation is reported to Security? 3. What are the rules governing carpool parking areas? Are they only in effect before 8 a.m. or do they apply at all times? (If I, as a carpooler, run an errand at noon, can I legally park in a carpool space when I return even if I am the only one in the car?)*

A. The rules for car pool parking are in effect at all times. SLI 1904 specifies that "two or more persons must be in the vehicle at the time it is parked." Thus, if you run an errand during the lunch period you should not park in the car pool area upon your return unless another person is with you. This rule is necessary in order to enforce car pool parking consistently.

Violations should be reported to Security at 4-7875, giving location and name of individual, or vehicle license/decal number.

Security will contact the individual, advising them that they have been observed committing a violation and future violations will result in the issuance of a citation.

C.L. Brumfield - 3400



# Retiring



Lin Griego (7815)



Jose Garcia (7818)



Roger Gonzales (7813)



Marcel Schiess (5215)



Dollie Jo Oldham (3715)



Horace Montoya (7484)



Bill Caldwell (7554)



Jose Baldonado (7482)



Ted Jorgensen (3721)



Antonio Garcia (7482)



Bill Price (5242)



Carl Longfellow (6252)



Charles Radigan (2858)

## Fun & Games

**Trekking** — The American Lung Association of New Mexico is sponsoring its 5th Annual Trek for Life and Breath this summer — a backpacking trek through the Pecos Wilderness July 10-14 and a bike trek Aug. 31-Sept. 2 through the Jemez Country. Both are fund raising activities for the organization.

Training sessions precede each event. For additional information, call the Lung Association, 265-0732.

\* \* \*

**Golf** — Winners of the recent SGA open individual tournament were (low net listed first followed by low gross) Dave Renninger (2113); Duwayne Branscombe (2116), first flight; William Alford (1124), Mickey Shortencarrier (3452), second flight; Dennis Gutierrez (7535), both low net and low gross, third flight; and Lewis Marlman (dep.), Lenor Morrison (316), fourth flight.

The next SGA tournament, a two-man best ball event, will be played June 1 at Socorro.



Here are some current volunteer opportunities for employees, retirees, and family members. If you would like more information, call Karen Shane (4-3268).

**ADELANTE DEVELOPMENT CENTER**, a United Way agency that assists severely handicapped persons in becoming more self-sufficient, needs a volunteer with electrical/electronic skills to help in rewiring a PA system. Speakers originally may have been wired in series rather than in parallel. Materials will be provided.

**NEW MEXICO SKI TOURING CLUB** (mostly Sandians) needs volunteers to help with summer trail development and maintenance on May 25 (Sandia Crest), June 1 (Peralta Canyon), and June 15 and 30 (Jemez Mountains).

**SHARE YOUR CARE** is a day care program that provides meals, field trips, recreational activities, and overall companionship to the frail elderly. Share Your Care needs a carpenter to build a cabinet to store television, VCR, and stereo. Materials will be provided.

**SICKLE CELL COUNCIL OF NEW MEXICO** needs an artist to produce silhouette images for a banquet announcement.

**BIG BROTHERS/BIG SISTERS** needs volunteers to serve as role models and friends to children primarily from single parent families. A handicapped child can be matched with an adult volunteer who has similar disabilities.



## New System Permits Real-Time Exhaust Particle Data

Your task is to throw a shovelful of smoke into a breeze, then catch the minute smoke particles, sort them, and weigh them — simultaneously. Sound impossible? Not long ago, it was. But that was before Jim Wang (8361) and his project team developed a particle mass monitoring system.

Their goal, admittedly, didn't involve shovels. They realized that, if new methods of producing electrical power with coal-fired systems, such as pressurized fluidized-bed combustors, are to be both efficient and environmentally acceptable, then the power industry must be able to maintain good control over the microscopic particles given off by the combustion process.

And, working in the Combustion Research Facility, they put together some off-the-shelf items and some ingenuity and came up with a new measuring system that provides continuous information on the microscopic exhaust particles, primarily coal ash, produced during high-temperature, high-pressure combustion.

"Our new system provides the first reliable real-time information about the amount and size of particles inside conventional and advanced coal-fired systems during the combustion process," says Jim, a member of the Combustion Research Division. "Conventional commercial particle detectors are either optical devices that don't measure particle mass directly or physical sampling devices that don't provide real-time measurements."

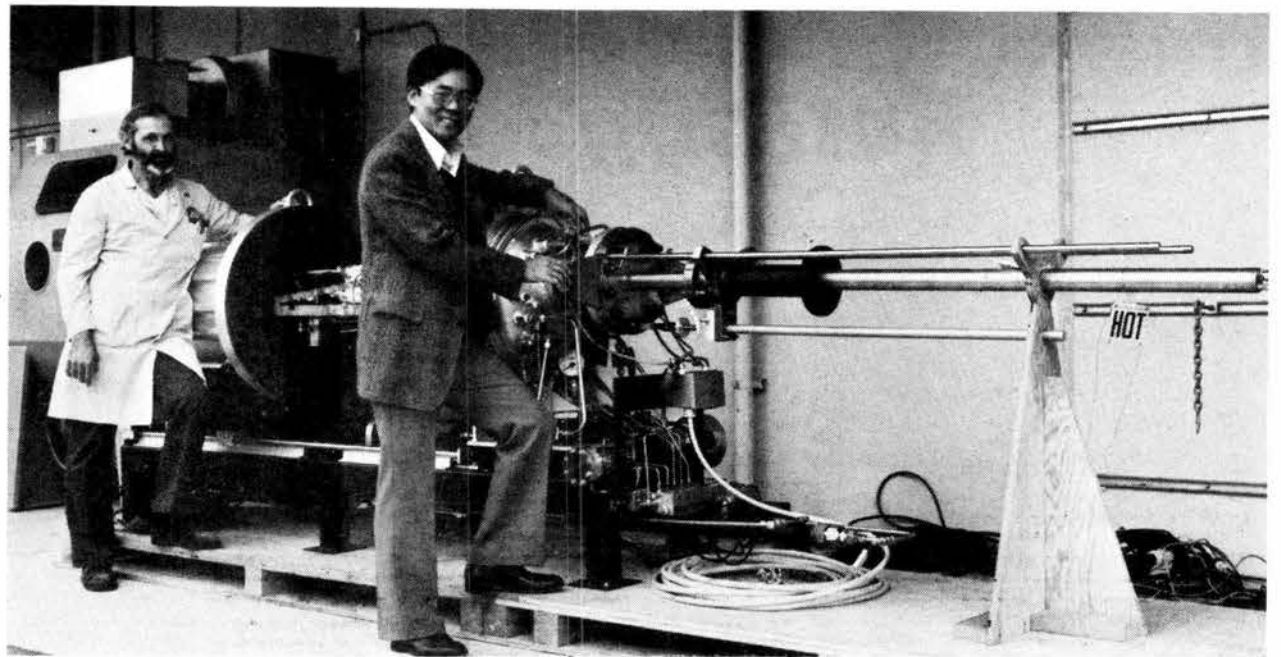
The new system can help identify environmentally acceptable and energy-efficient combustor designs. "For this reason, we believe it could be a key to successfully commercializing some of the new 'advanced concepts' for producing electric power from coal," says Jim.

Pressurized fluidized-bed combustors are the most promising of these advanced concepts. In such a combustor, coal particles are burned in a bed of sand with either dolomite or limestone, which contain calcium carbonate. During combustion, the sulfur in the coal, a major source of pollution, reacts with the calcium carbonate to form solid calcium sulfate that can be removed with the spent bed material.

The sand bubbling in the bed — like water bubbling in a kettle — fluidizes the combustor environment and mixes the ingredients thoroughly. This mixing means higher efficiencies — coarse grinds of coal particles (millimetre-sized, rather than micron-sized) can be used because the fluidizing allows a longer time for each particle to burn completely. It also means more sulfur can be captured by the limestone (or dolomite), and therefore lower emission of pollutants.

The combustor bed is pressurized at six to ten atmospheres. Pressurization helps keep the system small while providing higher energy levels than a nonpressurized system. That's because the hot pressurized air can drive a power-producing gas turbine. The turbine blades, however, are susceptible to erosion by coal ash, another reason for monitoring exhaust particles.

In addition, of course, the heat in the



REAL-TIME PARTICLE MASS SAMPLING SYSTEM is readied by Vic Ham and Jim Wang (both 8361) for shipment to Curtiss-Wright Corp. for the Pressurized Fluidized Bed Combustor Hot Gas Cleanup tests. Long tube on right is the electrically heated sampling tube that operates up to 950°C. Plumbing and valves in front of the pressure vessel at right are used for remote sampling and control operations via a minicomputer (not shown). Pressure vessel behind Vic houses the electrically heated cyclone train and a TEOM filter. The vessel has water-cooling channels on the outside to keep its temperature under 150°. Long black tube underneath the pressure vessel is the cooling section for the sampled hot gas stream.



# SANDIA LIVERMORE NEWS

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SANDIA NATIONAL LABORATORIES

MAY 24, 1985

combustor, which is used to generate steam (through in-bed heat exchangers), drives power-producing steam turbines. Bed temperatures are kept relatively cool — under 900°C — so minimal thermal NOx (nitric oxide, a notorious pollutant) is produced and emitted.

The real-time measuring system, which operates inside conventional or advanced combustors or hot gas cleanup devices, samples particles suspended in the flow at approximately the same speed as the stream of exhaust air, thus minimizing the disturbance to the sampling process. It then classifies them according to size and determines the amount of particulate matter in a cubic metre. To ensure prolonged, continuous operation, the particle collectors inside the sampling system are cleaned periodically and automatically.

Jim and his team have demonstrated that the particle-mass monitoring system (see related story) can quickly characterize the performance of a combustor exhaust or a hot-gas cleanup system, such as the new electrostatic precipitator developed by Research-Cottrell. "So actual testing time can be reduced tremendously — from a few months to a few days," says Jim.

"We can also use the system to detect, in just a few seconds, any transient changes in the performance of the test equipment and so prevent damage to downstream components caused by system upsets," he adds. "And we can follow changes in the performance of the test equipment over time and thus assess the reliability of the equipment. These are exactly the capabilities that should be most useful in developing and

evaluating all the principal components of advanced power systems."

Several laboratory and field tests have been conducted during the past several years. An advanced high-temperature, high-pressure system was tested in the CRF's Atmospheric Combustor Exhaust Simulator. Other systems were demonstrated at a Tennessee Valley Authority coal-powered electric generator plant, and at a 1 MW pressurized fluidized-bed coal combustor plant operated by Curtiss-Wright in New Jersey. Recently, Sandia engineers assisted Weyerhaeuser Co., Tacoma, Wash., in designing and testing an instrument for direct use within the combustion zone of an industrial boiler.

The particle monitoring device, developed as part of the DOE's hot gas cleanup program and funded by the DOE's Morgantown (W. Va.) Energy Technology Center, supports one of the CRF's prime missions: finding ways to use fossil energy more efficiently through direct combustion of coal. The program's success is the result of a team effort, with guidance from Ken Markel, DOE Program Manager, and Don Hardesty (8361), and technical support from Marcus Libkind (8348), Eldon Porter (8362), and Vic Hamm (8351).

But the new system could also be useful where information about combustion effluents or airborne particles is needed, such as for clean rooms in microelectronics fabrication facilities or hospitals, foundries, diesel exhausts, kilns, fuel cells, gas turbines, and inside hot gas cleanup equipment associated with most dirty fuel combustion systems.



**TEOM + Cyclone = PMMS**

## Inside the Particle-Mass Monitoring System

The essence of the advance made by Jim Wang and his project team was to link a tapered element oscillating microprobe, or TEOM, to a train of "cyclones." The resulting particle-mass monitoring system offers significant advantages over any conventional particle measuring systems (see related story).

How does a TEOM work? It can take either of two forms, depending on the application. Some TEOMs trap particulates on a ceramic fiber filter, others in a metal cup. However, in either case, TEOMs (which are supplied by the R&P Company, which has been working with Sandia over the past few years) measure the weight of collected particles by using a spring-mass oscillation principle: a glass element (shaped much like a champagne glass), which serves as a spring, is clamped rigidly at its mouth to a base plate.

For a filter TEOM system, a filter holder is attached firmly to the narrow end of the champagne glass. During operation the tip oscillates between two electrically charged field plates. As sampled gas passes through the filter element, exhaust particles suspended in the combustion gases collect on the filter, changing the weight of the TEOM's tip and causing oscillation frequency changes.

Data on the oscillation frequency changes are sent through temperature-tolerant optical fibers to a micro-computer-based process outside the combustion chamber. The processor translates the data into precise information about the amount of particulate matter collected.

"Such a filter-equipped TEOM is a simple, useful tool when we need to know only the total mass of the particulate

matter," Jim says. "However, we wanted to know more about the character of the particulates. So we added a train of cyclones to the sampling system. Used with non-filter—cup-type—TEOMs, these cyclones tell us what percentage of effluent particles fall into each of several size ranges."

And what's a cyclone? Cyclones are funnel-shaped collectors characterized by swirling air flows created by an inlet flow that's tangential to its mouth. For a fixed swirling velocity, which is proportional to the size of the cyclone, particles larger than a certain size lag behind, due to their inertia, and are trapped after hitting the cyclone wall.

Jim has used three cyclones in series to determine the percentage of particles that are larger than 10 microns, between 6 and 10 microns, between 1.5 and 6 microns, and smaller than 1.5 microns. (A micron, properly a micrometre, or 1/1,000,000 of a metre, is tiny; it takes about 100 microns to equal the thickness of a human hair.) The number of cyclones and cup-type TEOMs can vary, depending on details needed about a specific particulate.

Jim also developed a technique for cleaning the monitoring system without having to halt operations. The process involves backflushing the particle-collecting filter or cup with high-pressure gas puffs. "This process removes the collected particles almost completely," says Jim. "It blows them back out through the sampling nozzle and into the process stream."

"The complete particle-mass monitoring system gives us — for the first time — a continuous read-out of both the amount and the sizes of the particulates flowing through the air stream."

## Livermore Take Note

Burnie Biggs, retired 8000 vice-president, was recently selected as Distinguished Alumnus of the Year by his alma mater, Southwest Texas State University. The award was begun in 1959, and its first recipient was President Lyndon Johnson. Burnie's plaque commends him for "distinguished professional accomplishments, meritorious service to alma mater, and support of alumni affairs" over the years. He retired from Sandia in 1968 after eight years as vice-president. He was previously vice-president of development at Sandia Albuquerque.

### Credit Union Reporter

## New at the CU

Several new features have been announced at the Sandia Laboratory Federal Credit Union in Livermore.

A new night depository is located on the front of the building, with deposit slips available for after-hours use. Slips may also be obtained during regular business hours and saved for later night deposits.

Applications for a "CU Anytime" card may be picked up from the credit union. This card allows access to your credit union account from automatic teller machines at the Livermore Bank of America Branch, airports, and other locations. (Ask the credit union for a list of other sites where it may be used.)

Additional safe deposit boxes are now available in several sizes. Annual rental fees range from \$7.50 to \$30, depending on the size. For more information about any of the new services, contact employees at the credit union.

### Congratulations

Suzanne and John Didlake (8163), a boy, Philip Stephen, April 6.

Susan and Greg Thomas (8163), a girl, Andrea Nicole, April 28.

Cathy and Lee Radosevich (8471), a girl, Kellie Anne, April 30.

## Livermore Bond Drive Nets 94%

Final results of the 1985 Savings Bond Campaign show that 94 percent of SNLL employees are now buying Bonds, an increase of 12 percentage points over the figures at the beginning of the drive.

"We did very well," says Livermore Chairman Mike Pendley (8236). "Not only did our number of participating employees increase significantly, but the level of their commitment went up as well. I thank those people in each division who called on others in the drive, and also thank those who increased their monthly investment this year."



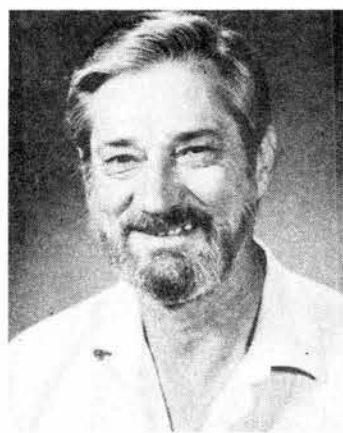
COPIES OF DOE PATENTS for their inventions were presented to Connie Visbeck (8444) and Ray Rynchnovsky (8152), right, by Vice-President Dick Claassen (8000) recently. Connie and Ray worked on an explosively separable casing for the B83, Connie doing the mechanical design and testing, Ray handling the pressure and explosion calculations. A third Sandian, Al Jacobson (2552), did the explosives work.



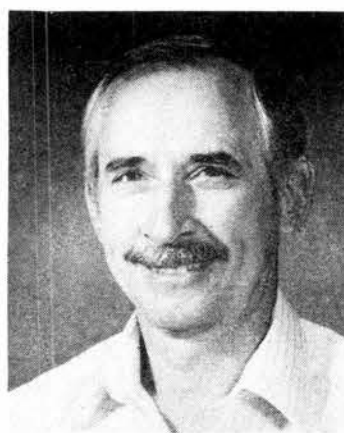
# MILEPOSTS

## LAB NEWS

MAY 1985



Bob Lucas (2541) 25



Charles McCarty (2157) 25



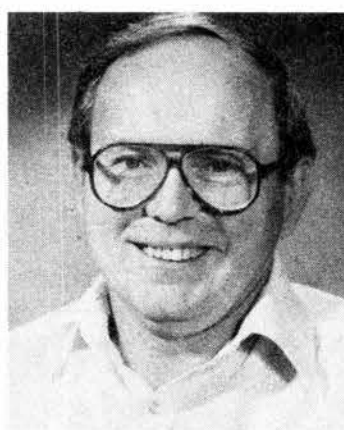
Gracie Miranda (8261) 10



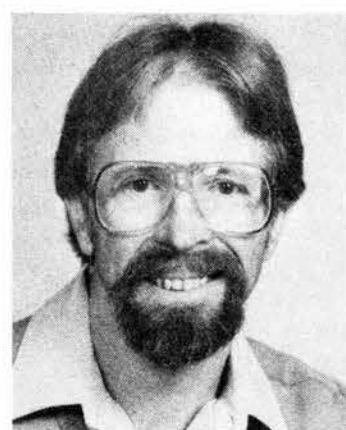
Fay Ganzerla (3155) 25



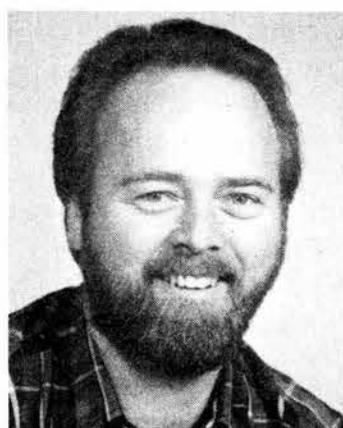
Delores Molina (153) 25



Charles Coffin (2858) 20



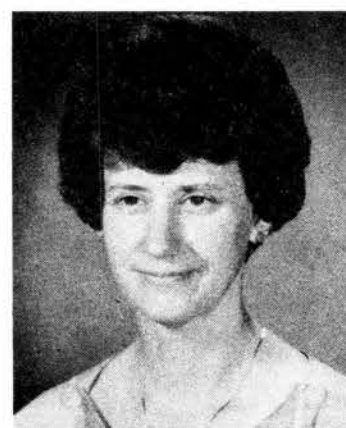
Jack Swearingen (8473) 15



Ken Hencken (8361) 15



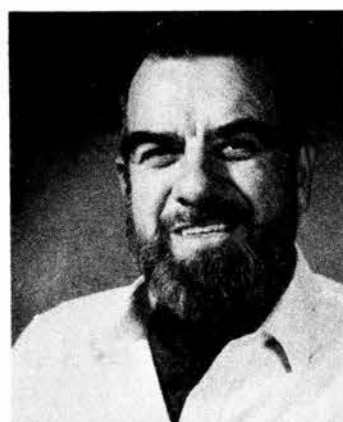
Clara Ostrander (3141) 30



Roberta Chinn (3532) 15



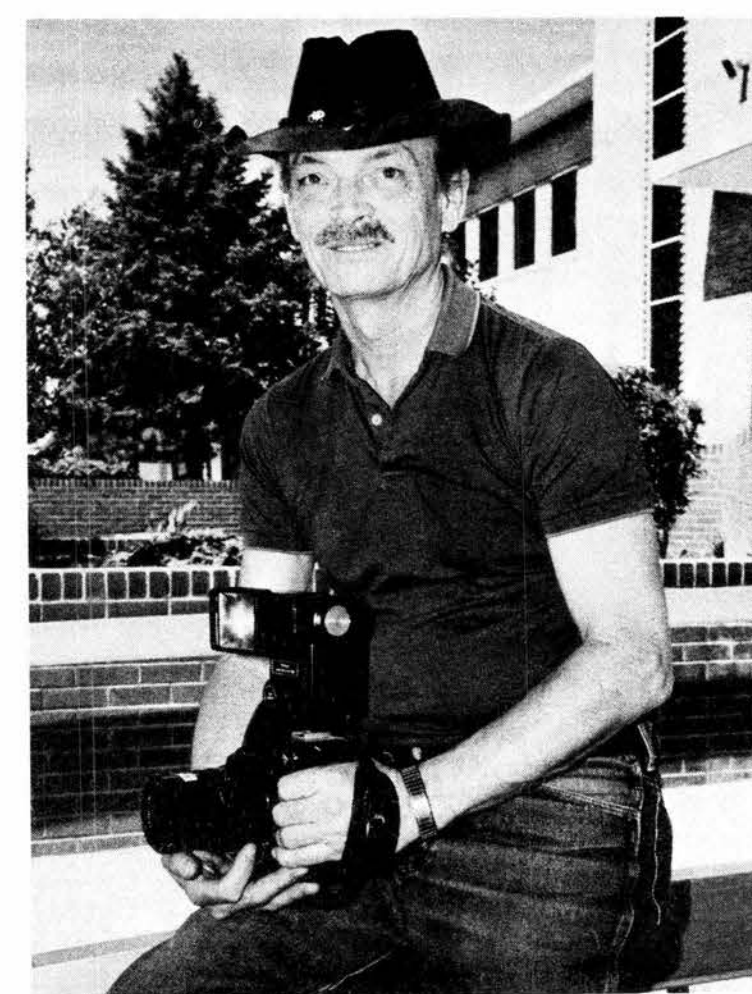
Edwina Kiro (1270) 15



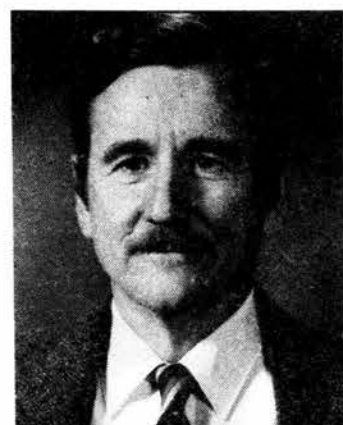
Keith Taylor (312) 15



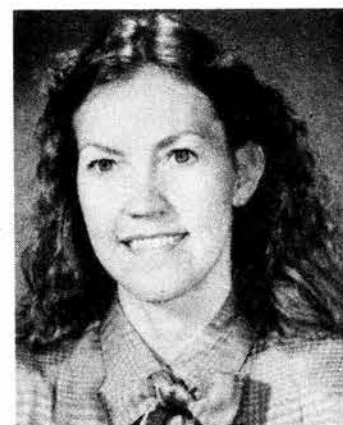
Britt-Marie Manrow (8181) 25



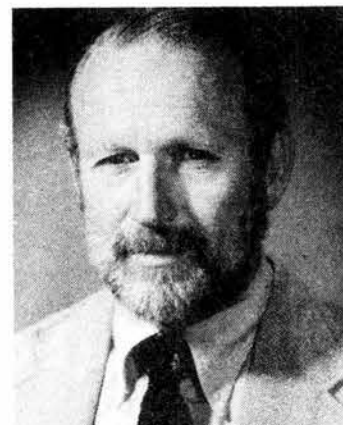
Jim Pennington (3155) 30



Bob O'Nan (2346) 30



Deborah Reinarts (3142) 10



Eric Jones (1124) 20





UNITED KINGDOM VISITORS were hosted by Ray Romatowski, manager of AL, and Orval Jones (5000) during briefings and a tour last month. From left, sitting: Orval Jones; Richard Norman, Chief Scientific Adviser, Ministry of Defence; Ray Romatowski; Peter Jones, Director, Atomic Weapons Research Establishment. Standing: Bob Ridley, Assistant Chief Scientific Adviser (Nuclear), Ministry of Defence; Peter West, Head, Atomic Coordinating Office, British Embassy, Washington; Bob Evans, Private Secretary to Chief Scientific Adviser; Glen Tayler, Office of Military Application, DOE; Bob Hymer, Assistant Manager, Office of Development and Production, AL; and Jim Mogford (400), US/UK coordinator. In addition to briefings on the weapon program at Sandia and throughout the production complex and a tour of the pulsed power facilities in Area IV, the group explored Sandia's use of CAD-CAM tools and techniques.

#### Scientific Literacy and Informal Learning



"Adults and children are exposed to many potential educational sources in their daily activities, and it is from such out-of-school sources that most people must learn for most of their lives. School science courses cannot provide all of the scientific information citizens will need throughout their lives to understand their changing world, or to participate in decisions about scientifically and technologically influenced political issues. School courses could be judged on how well they provide a framework for future informal learning when faced with presently unpredictable future needs. However, to make these judgements we need to have some idea of the ways people learn from other sources, and how what is learned in school interacts with ideas obtained elsewhere."

A.M. Lucas in *Studies in Science Education*

#### Younger Generation Faces Space



"Development of a space station will act as a catalyst in stimulating advances in all branches of aerospace engineering, not the least in education. It will provide a focus for education in the disciplines of space technology — for example, structural dynamics, optimal control, and systems analysis. Motivation toward a career in space engineering is already high among the present generation of students. They see, maybe more clearly than older generations, that space is where our future lies if we are to improve the quality of life for all people on our planet Earth."

Rene Miller in *Aerospace America*

### UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS • UNCLASSIFIED ADVERTISEMENTS

**Deadline: Friday noon before week of publication unless changed by holiday. Mail to: Div. 3162.**

#### Ad Rules

1. Limit 20 words, including last name and home phone.
2. Include organization and full name with each ad submission.
3. Submit each ad in writing. No phone-ins.
4. Use 8½ by 11-inch paper.
5. Use separate sheet for each ad category.
6. Type or print ads legibly; use only accepted abbreviations.
7. One ad per issue per category.
8. No more than two insertions of same ad.
9. No "For Rent" ads except for employees on temporary assignments.
10. No commercial ads.
11. For active and retired Sandians and DOE employees only.
12. Housing listed for sale is available for occupancy without regard to race, creed, color, or national origin.

#### MISCELLANEOUS

SINGER SEWING MACHINE, portable, late model, hardly used. Shelton, 843-7501.

CAR-TOP carrier, 21 cu. ft., \$95; stereo reel recorder, \$115; trade for Datsun AM/FM radio. Cowan, 897-1836.

CHROME/glass table, round, 36" dia. w/2 white vinyl/chrome director's chairs, \$100; matching lamp, \$30. Schkade, 292-5126.

SOFA, 9-pillow country French, pastel French blue velvet, purchased at Copperfields. Turpin, 299-7580.

REFRIG., 18 cu. ft. Norge, frost-free, white, 2 yrs. old, \$275. Townsend, 888-4732.

DISHWASHER, Kenmore under-counter, copper-tone, \$50. Mendel, 265-3840.

WOODSTOVE (old cook stove). Gabaldon, 864-3696.

GOLDEN retriever puppies, parents are both reg., \$200; Sears exercycle, \$30; bathroom shower door & cast iron sink. Morrison, 298-0347.

WINDOW screens, various sizes; Lombard chainsaw, 16" blade; Adler cabinet model sewing machine. Henning, 884-4907 after 1:30 p.m.

COMPUTER, TRS-80 Model III dual disk, 48K RAM, \$350 or trade for good color TV or whatever. Roeschke, 298-0365.

BEDROOM set: dresser, mirror, chest, night stand, full size bed w/mattress & springs. Thomasville, \$400.

Lang, 291-0650, 299-7509.

SEWING machine, Singer zig-zag, needs some adjustment, \$40. Tessler, 296-7587.

4 STEEL radial tires: 185/70/13 Toyo, take offs, \$10 ea. Gorney, 821-9623.

CARPETING, gold shag, 2 lg. pieces for total of 50 yds. Filusch, 299-5932.

UTILITY TRAILER, X-HD, 5' wide, 10' long, 30" side boards, 4" channel construction, HD tires, 2" x 8" flooring, \$700. Wright, 296-3850.

CORVETTE accessories: smoked plexiglass T-tops w/protective cover for '72-81, \$350; front mask for '73-74, \$50. Blaine, 869-6584 after 7.

TRAIN set, HO Gauge, 23 different cars, 3 engines, 3 transformers, track, board, etc., \$425 OBO. Weart, 298-2573.

LIONEL train set (1950 vintage) w/4' x 8' platform (or use as ping-pong table), best offer. Wowak, 298-9398.

PORTABLE VHS Hi-Fi VCR & camera w/fluid head tripod, 2 mos. old, new \$2150, sell \$1900 OBO. Dodson, 832-6950.

SEARS elec. fence (for weed or animal control), \$15; 18' x 12' blue, sculptured area rug, \$50; new Remington .22 pump action rifle, \$100. Ahr, 883-0459 after 5.

SEARS 1½ HP elec. irrigation pump, 110 or 220 volts, \$145. Allen, 869-6680.

SEARS centrifugal water pump, 2" input/1½" out, 115/120 AC, well must be sand free, \$100. Chavez, 842-6374.

MICROWAVE oven, full size w/pullout glass tray, used 3 yrs., \$125 OBO. Spears, 266-9782 after 2 p.m.

HIDE-A-BED, queen, mid-brown w/stripes, \$75. Jones, 255-7924.

TABLE (42" x 58"), earhtone Formica, w/4 beige vinyl chairs, \$50; box size 12 summer & fall maternity clothes, \$25. Wilder, 299-6198.

PARACHUTE RIG, complete: skydiving rig & jumpsuit, Ram-Air Strato Star, modified 26" conical reserve, SST backpack, new Silly suit, \$650 OBO. Demos, 294-6492.

DOG HOUSE, med. size, \$10. Bingham, 298-6489.

WINCO 3000 watt gas generator, \$450; Sears 1 HP self priming centrifugal pump, \$150. Gravning, 865-5581.

MICROWAVE, Kenmore, variable power, \$125; freezer, Kenmore, upright, almond, 12 cu. ft., 2 yrs. old, \$200. Williams, 292-1210.

DESK, metal, 30" x 60", 6-dwr., dbl. pedestal, \$75; oak desk chair, \$10. Behr, 292-0549.

RAILROAD ties, 30 - 2 inch, best offer. Keeler, 299-1501, 299-1542.

TELEVISION, RCA 19" color port.,

\$35. Matlack, 256-7371.

LA MOTTE STH-4 soil testing kit, will analyze for nitrogen, phosphorus, potassium, calcium, iron, sulfate, etc., \$50. Auerbach, 296-1489.

DISHWASHER, J.C. Penney port., dual-spd., can be converted to permanent installation, \$50. Grey, 299-7349.

LOUNGE chair, gold tweed, \$75; French Provincial chair, needs upholstery, \$25; upright magazine rack, \$15. Dillon, 881-3843.

GARAGE SALE: Fri. & Sat., May 24-25. Serta king size bed & frame, \$150; apt. size gas stove, \$50., misc. Kissam, 881-2895.

WASHER & dryer, apt. size, \$60. Aydelotte, 867-4143.

SAILBOARD, O'Brien, mylar sail, vario boom, footstraps, adjustable mast base, retractable centerboard, free lesson. Ritchey, 268-7620.

AKAI GX-230D tape deck, \$350; Dunlop Touring Elite, MP90H18, \$50; R100Rs touring seat, stock shocks, oil pan, springs. Kovacic, 281-1754.

COUCH, \$100; Sears 22" lawn mower, \$100; LR chair, \$75; recliner, \$75; truck tires, \$5, 700 x 15, G78 x 15. Falacy, 293-2517.

CAMPER, slide-in, cabover, 10', stove, heater, icebox, tie downs, \$795. Tapp, 821-3843.

WHITE toy poodles. Saxton, 296-8009 after 5:30.

RABBITS, \$2 ea., 6-7 wks. old, mixed breed; free young rabbits. Widenhoefer, 298-2510.

#### TRANSPORTATION

'83 HONDA GL1100 Goldwing, no accessories. Edwards, 281-2743 after 7.

'63 GMC bus, rebuilt engine, 305 V6, converted w/stove, refrig., sink, bathroom, \$4K OBO. McClure, 298-9824 after 5.

'84 SUBARU GL 2-WD stn. wgn., low mileage, all the extras. Painter, 881-7041.

BICYCLE, 3-spd., mens, Sears, fenders, rat-trap pedals, baskets, drop handlebars, \$50. Joseph, 299-6989.

'72 CHEVY stn. wgn., 350 V8, PS, PB, AC, AT, luggage rack, \$995 OBO. Thompson, 292-2877.

'76 PONTIAC Firebird, AT, AC, V8, one owner, 64,600 miles. Taffe, 256-7685.

'78 HONDA Civic, hatchback, sun roof, AC, std., one owner, low mileage, \$1600. Lang, 291-0650, 299-7509.

'72 TOYOTA Corona, rough exterior, needs engine work, \$100. Tessler, 296-7587.

'82 HONDA Goldwing Interstate 1100I, full dressed, \$1500 chrome extas,

low miles, \$5K OBO, consider trades. Fetzer, 299-9198, 888-4994.

'80 YAMAHA XS400, \$625 OBO, cover & battery charger included. Barbera, 298-7049 after 11 a.m.

'79 FORD Fairmont, 4 dr. bronze, 4 cyl., 2.3 liter, manual, R&H, steel belts, low miles, \$2200 firm; '71 Ford Galaxie 4-dr., AC, PS, PB, radio, new tires & battery, \$500 firm. Jones, 881-8341.

'55 CADILLAC 4-dr., best reasonable offer. Taylor, 266-3302.

'83 TOYOTA pickup, 5-spd., long bed, sliding window, bed protector, AM/FM cassette, 27K miles, below book. Patterson, 299-1062.

'76 CORDOBA, AC, AT, PW, PS, vinyl top, 76K miles, \$2000. Duus, 296-0882.

CABIN CRUISER, 17' w/tilt trailer, 110 HP in board Mercury engine, stern drive, consider trade for motor-home. Eiffert, 268-1854.

'76 CHRYSLER Cordoba, AC, PB, PS, CC, etc., low miles. Gallegos, 881-3289.

'69 CHEVROLET Impala, 350 V8, AT, \$450. Bingham, 298-6489.

'83 TOYOTA SR5 long bed, 15K miles, bedliner, insul. shell, loaded. Wintersberger, 294-1289.

'72 TOYOTA, \$800. Ortiz, 897-2209.

'74 HONDA Civic, free (sheet metal only), doors, \$40 ea., hatch, \$40; other parts. Zirzow, 294-7296.

'84 DODGE Colt Vista, 7-passenger, tinted windows, AM-FM stereo/cass., extended 50K mile warranty, \$6995. Mattson, 842-1453.

SCHWINN Varsity 10-spd., bicycle, \$65. Smith, 299-6873.

'80 MERCURY Capri RS turbo, AC, PS, PB, new tires, locking alum. wheels, more, 46K miles, \$3500 OBO. Goodwin, 294-6702.

'79 CHRYSLER Cordoba, sunroof, p seats, & more, \$2600; 2 Honda CT-90 trail bikes, '75 & '71. Hardin, 293-5679.

'67 FORD Galaxy 500 2-dr. HT, AT, PB, PS, one owner, 86K miles, best offer. Auerbach, 296-1489.

'79 FORD F150, 351, 4-spd., 53K miles, dual tanks, sliding R/W, spoke rims, new tires, PS, \$4500. Conklin, 881-0627.

'77 MONTE CARLO, V8, AC, sun roof, landau top, 64K miles, \$2K. Hartwig, 298-5048.

'75 DUSTER, \$500, steering needs attention; 5-spd. bicycle. Fisher, 881-8072.

'83 YAMAHA IT175 dirt bike, \$975. Weber, 293-7522 after 4:30.

'74 CHEVROLET Blazer, 4-wd 4 x 4, 350 V8, new trans., rebuilt engine, \$2650. Gonzales, 294-6823 after 5.

'76 PONTIAC, one owner, 4-dr., AC, \$850. Tapp, 821-3843.

'73 FORD Ranchero, 302V8, 86K miles, all season tires, chains, 3-spd., orig. white paint, \$1595 OBO. Mooney, 281-2612.

#### REAL ESTATE

'82 MH, 12' x 56', furnished, in park near Base, \$15,500 OBO, will finance. McClure, 298-9824 after 5.

5½ ACRES Jemez Mtns., electricity, pure spring water, natural gas, Ponderosa pine & meadow, Nat'l. Forest surrounding, subdividable, \$48,500. Hughes, 299-6674.

A FRAME plus addition, refrig., range, ¾ bath, roughed for W/D, soft water, as is, you move, \$6K. Coulter, 867-2127 after 5.

CONDO, SE, 1-bdr., \$28K, pool, hot-tub, security, laundry, pest control, parking, assumable 11.8% fixed w/\$2K down/REC. Mattson, 842-1453.

2-BDR. MH w/FR & greenhouse additions, horse facilities, 5 acres, 15 miles east, \$47,500, terms. Navaroo, 281-9610.

1790 SQ. FT., 3-bdr., 1¾ bath, landscaped, solar water/heat, near Montgomery & Wyoming, \$85K. Mahnesmith, 294-0078.

#### WANTED

SMALL dog house for small price. Trompak, 299-7971.

PRINTER to interface w/Commodore 64 PC. Bowland, 256-1861.

DIRT, clay or caliche, needed to rebuild BMX track for July Nationals, will pick up. Bauerle, 877-7252 after 9 p.m.

FOUR cycle power lawn mower in good condition, preferably w/grass catcher. Ernest, 293-1757.

HOUSING: visiting summer professor & family, begin July 14 3-6 weeks, 3-4 bdr., prefer pool access. Easterling, 298-7083, Van Ness, 296-3323.

¾ HP pump in working order. Mason, 281-3052.

FEMALE roommate wanted: 3-bdr., luxury home in NE heights. Baca, 296-8783.

OLDER pickup in good condition. Lyle, 298-1106.

MEMBERS: Beta Aloosters Toastmasters Club, meets Mons. 12-1 p.m. at C. Club, visitors welcome. O'Guinn, 265-0424, Yoshimura, 294-0224.

#### WORK WANTED

LAWN mowing, estimates, references on request. Greg Cook, 296-3064.

LAWN care, landscaping, mowing, trimming, pruning, hauling, sod, gravel, rr ties, sprinklers, etc. Paul Holt, 294-6928.



## Grand Opening Pool Party Monday

TONIGHT the popular Isleta Poor Boys are on the bandstand while the dining room staff offers a couple of two-for-one specials — your choice of filet mignon or snow crab, two dinners for \$12.95.

ON MONDAY, May 27, the Club combines the Memorial Day holiday with its annual grand opening party to inaugurate swim season. The twin pools open at 11 a.m. to start a day of fun and games. There'll be hot dogs, hamburgers, barbecued beef and chicken, salads, and other goodies on a luncheon buffet spread, some diving contests for kids and adults (translate that to adults dive to retrieve cans of beer from the bottom of the pool, cokes for kids in various age groups). The little ones in the children's pool get to scramble for coins. Also, pole-climbing contests and relay races in the pool for various age groups are scheduled. Recorded music by Dunn's Dancing machine plays in the afternoon. Those who do not have pool and patio tickets pay \$1 admission.

HAWAII is the destination of a new Club trip announced this week. Dates are Sept. 14-20. The package includes round trip airfare, baggage handling, transfers, and six nights at the Waikiki Gateway hotel. Price is \$510 (double occupancy). Sign up at the club office.

A second new trip, just announced, is a one-day charter bus excursion to the Indian Ceremonial Aug. 10 in Gallup. The trip includes a continental breakfast on the bus, arrival in Gallup in time for the parade, the rodeo and other activities, and watching the ceremonial dances that evening. Cost is \$35 per person. Sign up right away.

The Club office also has details on upcoming trips to Disneyland, June 23-25, \$202; Colorado, June 29-July 6, \$299; and Canyon De Chelly, Oct. 20-21, \$90.

THE BIG BAND with the music of the Big Band Era — Don Lesmen's orchestra — will play Friday, May 31. The dining room menu that evening features filet mignon or snow crab — two-for-one at \$12.95. Make reservations early; Lesmen's group drew a capacity crowd the last time he appeared at the Club. Call the Club office, 265-6791.

FAMILY NIGHT on Saturday, June 1, offers a triple entertainment — cartoons on the big TV screen, Mopsey the Clown performs, and a Walt Disney movie — *The Incredible Journey*. Food service, a family buffet of the kind kids like (and inexpensive) starts at 4:30 along with the cartoons. Mopsey performs at 5:30, and the movie starts at 6 on the movie screen in the ballroom. There is no admission charge.

ON FRIDAY, June 7, the Isleta Poor Boys return to make country western music for dancing in the ballroom. The dining room offers two-for-one prime rib or fried shrimp for \$12.95.

THE THUNDERBIRDS retiree group has scheduled a meeting of the general

membership on Monday, June 10, at 2 p.m. in the ballroom. The card-playing Thunderbirds meet Monday, May 28, at 10:30 a.m.

FATHER'S DAY, June 16, at the Club will be celebrated with an old-fashioned barbecue cookout on the patio starting at noon. There'll be a big spread of barbecued beef and chicken, an assortment of salads and fruit, baked beans, vegetables, and other goodies for \$5.50 adults, \$3 for kids. A grilled-to-order New York steak will be available for \$6.95. A western band will play for dancing from 2 to 6. Or bring the suit and swim in the twin pools. Draft beer for 50 cents will also be available. Now, pop, what else do you need? Reservations are not required, but would help in the planning for the event. Call 265-6791.

## AIAA Classified Meeting Success With Sandia Help

"Soviet Threat Technology," a recent classified meeting held in Sandia's Technology Transfer Center, was attended by more than 300 from across the US. Sponsored by the American Institute for Aeronautics and Astronautics, the meeting marks an innovation in Sandia cooperation with technical societies. Sandia provided the facilities of the Technology Transfer Center and security services, and processed clearances for the attendees. Some 150 Sandians attended the meeting.

Speakers were authorities on Soviet aerospace technology, according to Gary Polansky (1633), program chairman. Topics discussed included aircraft and cruise missiles, naval capability, ballistic missile defense, and strategic missiles.

AIAA sponsors about two Invited Lecture Series a year, Gary says. The one at Sandia was the first classified program, and the most successful of any of the lecture series. Usually, attendance is around 200 for one of the national educational meetings.

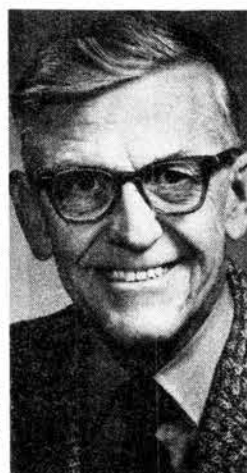
Walter Rutledge (1635), chairman of the 300-member AIAA Albuquerque Section that hosted the event, said the meeting was "successful beyond expectations. Our program will set a precedent for AIAA future meetings."

## Death

Allyn Phillips of Simulation Technology Laboratory Operations Division 1236 died suddenly May 10. He was 64.

He had worked at the Labs since March 1958.

Survivors include his wife, five sons, and six grandchildren.



SPREADING THE WORD on the upcoming Grand Opening party for the Coronado Club pool and patio area are lifeguards Jeremy Ham and Robin Coats. An all-day schedule of fun and games starts at 11 a.m.

## Events Calendar

May 24-25 — "Come Fly With Me," the Cabaret Co., 8 p.m., 2nd Story Arts Center of ALT, 224 San Pasquale Ave. SW.

May 26 — Movietime at the KiMo: Movies by Great Directors, "Los Olvidados (The Young and the Damned)," English subtitles, Luis Bunuel (1950), 7 p.m., KiMo.

May 28, 30, June 1, 3, 5, 7 — June Music Festival, Guarneri String Quartet, 8:15 p.m., Woodward Hall, UNM, 277-0111.

May 30-31 — Elizabeth Waters Dance, 8 p.m., KiMo, 766-7816.

May 31-June 23 — "Statements — A Perspective on Contemporary Art in NM, 1985," Fine Arts Gallery, State Fairgrounds (enter Gate 3), opening reception 5-7 p.m., May 31; 1-5 p.m. Tues.-Sat., Juried exhibit of contemporary work by NM artists for the Celebration of Arts.

June 1-2 — Rose Society Show, June 1, 3-6 p.m.; June 2, 10 a.m.-3 p.m.; Albuquerque Garden Center.

June 2 — "Quilters," Denver Center Theatre's hit musical play about the lives of American pioneers as seen through the eyes of women who made new homes in the wilderness, 8 p.m., KiMo.

June 2 — Second Annual Music of Albuquerque Festival: country-western, opera, jug band, mariachi, rock, pop, show tunes, jazz, blues, classical, choral; jugglers, clowns, magicians, street theater players, and arts and crafts booths; pinatas, photo contest, and food and drink; 10 a.m.-7 p.m., State Fairgrounds.

June 2 — Fundraiser for Albuquerque Special Preschool (school for handicapped & developmentally delayed infants & children): arts & crafts, food, children's activities; 10 a.m. - 4 p.m., Tiguex Park (Mountain Rd., across from Albuquerque Museum), 266-8811.